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Beyond Compliance: The Human Factor

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Many have toiled for years to provide safe and healthy workplaces. Safety professionals, safety committee members, unions, managers and many others all helped to improve safety performance in the early years. The stakes rose significantly in the 1970s with the establishment of the Occupational Safety and Health Administration (OSHA). A lot of rapid progress was made during the early years of OSHA as the focus was centered on compliance with standards. Unfortunately we started to see the pace of improvement slow in the last 20 years. This slowing of improvement has frustrated many safety professionals. Part of the issue is the central focus has been almost only on compliance. Now don't miss interpret that statement. There is still much work to be done in the compliance area and we need to keep improving. It also doesn't help that many of the standards are inadequate given new and developing technologies. The point is that we shouldn't expect exponential improvement working on compliance issue alone. Human error is a serious component of safety causation. We are not talking about intentional unsafe acts. Many like to focus on intentional unsafe acts but we have two other more important areas to work on. The first is unintentional activity that increases the potential of an injury producing incident. People do make mistakes that they never intended to make. The second area is the individual's habits with respect to safety. This is their individual safety culture. Just like organizations individuals have a safety culture. These two issues are the human factors we need to address.

To help you understand the human factors better, let's go back and look at parts of another article I wrote over twenty years ago. In that article it was pointed out that the journey to attaining world class safety performance starts with a clear understanding of where you have been, where you are today and where you are going if nothing changes. Then you can determine the changes that need to be made and the path that will get you to your goal. It was noted then that not all organizations are willing to make the effort to get better. Below is a brief description of each stage of the journey. Remember that you are not alone others have taken the journey before you. Each organization will fit into one or a combination of stages. A description of each stage follows:

1. Realization: Organizations in this stage usually see skyrocketing injury rates and "through the roof" worker compensation costs are prompting management to do "something." Governing bodies often conduct audits and identify areas of improvement to meet minimal compliance requirements. Consequences to non-compliance can be very costly. Financially the direct costs of loss time injuries are affecting overall profitability. Companies at this stage are at a legal risk and employees have a high risk of injury. Occasionally you will see a company much more advanced that this level simply come to the realization that they want to get even better at safety

performance. In this case the company in question spans a number of stages but the realization that they need to do better is common in both situations.

2. Traditional: Companies at this stage of the process are still at risk of injury but are probably at a point where they are protected from most legal risk by Worker's Compensation sole remedy laws. There is minimal legal risk at this stage. Priorities are placed on developing policies and procedures and the education process begins. They haven't succeeded in changing behaviors yet and workers and management are still apt to do what is convenient for them. An increase in production and overhead costs results from having identified at risk conditions and taking appropriate steps to engineer out the hazards. Machine maintenance and repair, shielding and guarding derive from a reactive management approach – "we'll fix it when it's broken". Most stop their development at this stage.

3. Observation (process): Management initiates an observation based safety program in addition to the traditional program and spends more time on the production floor or the worksite "observing" for hazards with compliance in mind. Concern for compliance is at the forefront of their minds and more adequate record keeping becomes a priority. Management drives the improvement process. There is little to no employee involvement at this stage because the observations are performed by management employees.

4. Empowerment: Management and employees share in the responsibility of understanding risks, preventing injuries and are jointly accountable in the education process. The employees have gained confidence in the management group that safety is a core value of the organization. Employees drive the improvement strategies and all are committed to company and team goals. Not only is the company continuing to decrease injuries in the workplace, increasing awareness of risk factors through employee observations the employees are developing "habit strength" for effective safe behaviors. Financially the organization is reaping the benefit as a result of a continuous decrease in loss time injuries and is experiencing a competitive advantage as monies are being allocated to other areas of the organization. Productivity and quality is also improved.

5. Utopia: The company's safety culture is self-sustaining and developing. Employees are looking out for each other and peer to peer safety interventions are a normal part of the operation. The company is progressive in its approach to safety and has become the benchmark by which other companies in the industry measure their safety performance.

Figure 1 below will help you visualize where their company is and how it compares to others. The larger the area of the diamond the more companies in that stage. For example the safety performance of most companies in North America can be found in stage two.

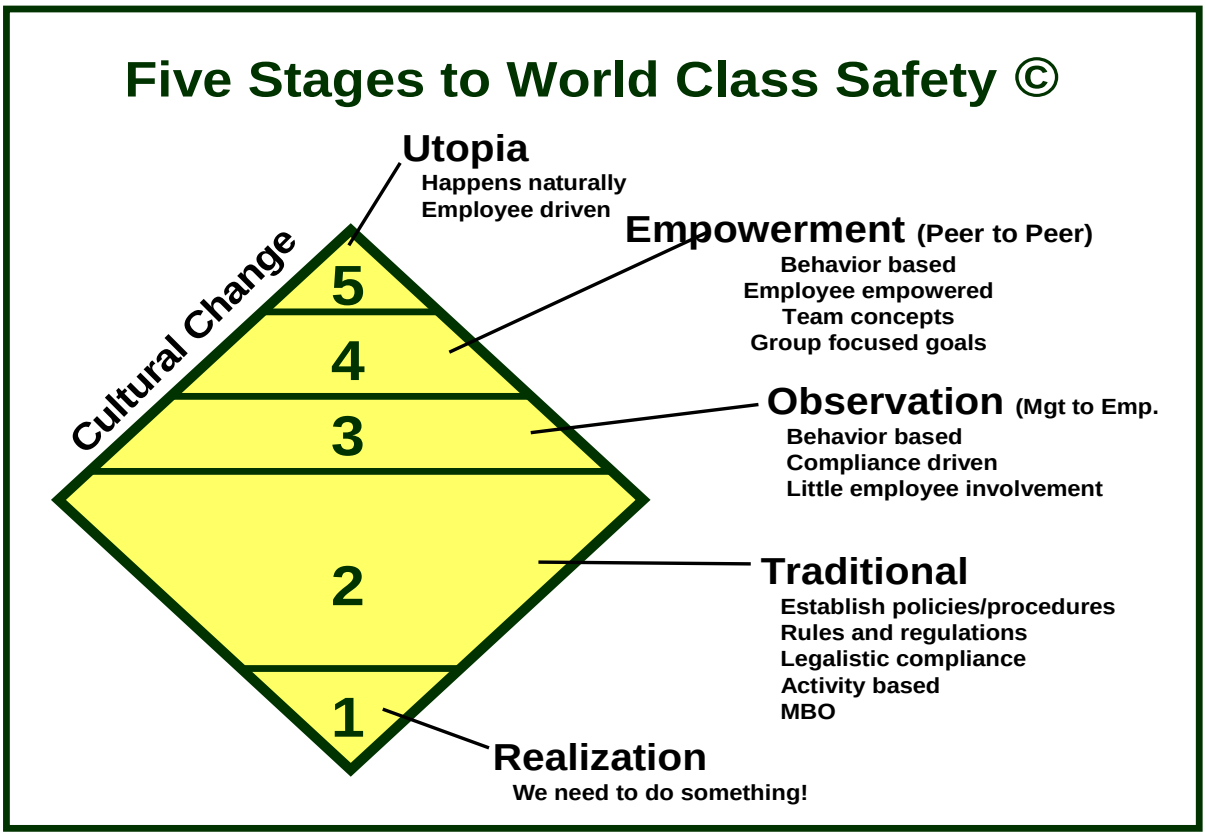

Figure 1. Five Stages to World Class Safety.

A Change of Thought

While I haven't changed my mind about the progression, I have found an issue that needed to be dealt with. The Habit Strength behaviors talked about in the fourth stage work under normal situations but under stress our habits, even those that have become natural or normal, can be lost in a heartbeat. For example: I was performing an audit at a large manufacturing facility. During the audit I noticed one forklift operator was particularly good at his craft. He always wore his seatbelt and never set a load at the production line without clearing the employees and when he entered a trailer at the loading dock he always inspected the trailer and assured the wheels were caulked. He just did everything right. In the afternoon I noticed some extra activity on the production line. The line was going down because of a missing part that was stored outside in a trailer that was stuck in the snow. The assembly line employees were incentive workers and they didn't want the line to go down because it would cost them money. Just 30 seconds before the line was to go down the truck was freed from the snow and backed to the dock. The forklift driver I had been admiring jumped on his forklift drove into the trailer and got the load. He placed the load on the line and everyone cheered. The problem is he didn't fasten his seatbelt, he did not clear the employees from the area before placing the load and the trailer was not caulked. If the semi driver would have pulled foreword to reset the trailer who knows what might have happened. His habit strength, under stress, was lost in an instant. Note that he never intended to make the errors he made. So this idea of using observations to establish habit strength has a hole in it. Now don't take this wrong. We need systems like observations and compliance initiatives

to establish “habit strength” but it is a little naive to think that once habit strength is established it will not change either intentionally or unintentionally. The interesting thing about this situation is that when I asked him about the sequence of events he didn’t even know he had made those errors. His statement was “I couldn’t have done those things I always use my seatbelt, I make sure the wheels are caulked and I never move a load into place when employees are close to the load.” He was right to a point. Under normal situations he always did the right thing but under stress his actions were not always predictable.

So we have a gap in the system if we only use traditional (compliance) and observational methods to establish safety operational standards, work habits and the safety culture we all want. This stress issue is a very important one that needs to be dealt with in as effective a way as possible. A great deal of this stress control rests on and with the employee themselves. Management certainly has a lot to say about the stress issue with demands on employee performance. However, the ultimate controller is the employee. The issue is that the employee can’t do anything about it without the skills needed to control these situations. You can’t simply tell them to be careful and expect everything to be under controlled. In order to be effective at reducing this type of error in the workplace or for that matter at home or on the road we first need to understand how it fits into the whole “At Risk Behavioral Model”. Then, after we understand how at risk behavior is often encouraged and supported, we can start to chip away at the issues and help with the challenge of not only having a safe and healthy workplace but also having employees who have the skills and motivation to work safely. The “at risk” behavioral model consists of six parts: Types of at risk behavior, sources of unexpected events, critical errors leading to injury, states of being “stress” contributing to errors, hazard awareness and finally “Critical Error Reduction Techniques.”

Another issue that needs to be mentioned here, although we can’t get into the depth I would like, is an obvious issue that is almost always overlooked. Traditional and behavioral safety methods are only directed at work. They do little, if anything, to help with off the job injuries. Sure we might start to wear ear plugs or safety glasses when we work around the house but there is no knowledge transfer leading to changed behaviors. We give a lot of lip service to off the job safety but little is actually accomplished. So as we go through the “at-Risk” behavioral model think in terms of safety 24/7 not just at work

At-Risk Behavioral Model

Three Types of At-Risk Behavior
The three types of at-risk behavior are as follows:

1. Intentional: This is where the employee knows full well that the activities they are doing are not safe and that there is a significant amount of risk associated with the activity. The activity is usually against a policy or procedure. Often this type of activity is supported by a concept called “Positive Reinforcement of a Negative Act”. The employee knows both the risks and benefits of doing a task at risk but the benefits, in his or her mind, out weigh the risks. Now each time they successfully perform the task “at risk” there is a little more “Positive Reinforcement of a Negative Act”. The more reinforcement the more they will perform the task at risk.

For example: an employee may have an assignment that requires the use of a step ladder. The task requires at least a twelve foot step ladder. The twelve foot step ladder the employee is to use is very heavy and stored far from the point of use. The employee has found a light fiberglass step

ladder stored near the point of use but that ladder is only seven foot tall, however by standing on the top of the ladder, where there is a sign stating “not a step or no step” he can perform the task required. Using the wrong ladder has increased the risk of the task but the increased risk does not mean an injury is going to occur. When he first starts to use the improper ladder he is very alert to the added risk and exercises extra caution. If the positive reinforcement to this negative act is strong enough he will even share his “success” with others (use this ladder it is quicker and easier) and if not checked this activity soon becomes the new standard and everyone will be doing the activity at risk.

Note that even if people are deliberately willing to increase the risk of a situation, hardly any of them are deliberately trying to get hurt. The interesting thing about intentional at risk behavior is that if the intentional risk continues to be accompanied with high awareness and alertness the injuries are infrequent.

2. Unintentional: The employee never intended to do it. Common things like slipping and falling or hitting our thumb with a hammer. An act that is unintentional in nature but an error nun the less. This is can also be a situation where the employee is unaware of the risks. There is a flaw in the training and their personal experience has not yet caught up with the risk. They are simply not aware of the risks or the methods they need to use to protect themselves. This can be a case of no training, under training or employee inattention to the training.

3. Habitual: Like the intentional at risk behavior we covered above, the employee knows the risks but has been doing the activity so long that they are no longer as alert to the risks. When the employee in our example above first started to use the improper ladder he was very alert to the added risk and exercised extra caution but over time the activity has migrated from intentional with a high degree of caution to habitual with limited caution. Once a high risk task moves to habitual complacency has set in.

No matter what type of at risk behavior is involved something unexpected or unplanned always has to enter the equation.

<u>Three Sources of the Unexpected</u>
Another concept we need to understand before we can work on preventing or at least limiting complacency is “sources of the unexpected. To get hurt or even have a close call a number of things have to happen. In effect all the dominos need to fall into place. To get hurt you must have at a minimum enough energy to cause an injury, you have to come in contact with the energy and something unexpected has to happen. There are three sources of the “unexpected”

1. Mechanical: Something breaks usually due to a mechanical failure. A seal breaks, a chain fails or the brakes fail on your car. There is no warning and the person or employee has no idea anything is wrong or will go wrong.

2. The Other Person: Someone else does something the person or employee does not expect: Someone runs a red light or stop sign. Someone working overhead drops a hammer from above.

3. Ourselves: The third source is that the person or employee does something he or she never intended to do in the first place. This source of the unexpected is where over 90% of the injuries originate. It is difficult to blame the hammer or someone else when you hit your thumb or blame the chair or someone else when you stub your toe.

Four Critical Errors

We are going to concentrate on the "self" area given it is from a behavioral focus the area with the most potential to improve. So, in the self area mentioned above, there are four critical errors that give us the most trouble:

1. Eyes not on task: Not looking at what we are doing or not looking before we move our hands, feet or body. Without looking we lose the ability to react to events as they occur and have lost our best defense against injury.

2. Mind not on task: Not thinking about the task we are doing. We are driving on the interstate not thinking about where we are and miss our exit.

3. Being in or moving into the "line-of-fire:" Placing ourselves in the line of fire like reaching into the car while someone else shuts the door or the wind blows it shut.

4. Losing our balance traction or grip: Slipping or tripping that causes us to lose our balance and fall, or something as simple as losing our grip leading to a fall or dropping something.

Understand that you may have an injury in the mechanical and other person sources of unexpected area mentioned above without one of these four errors but you will never have an injury in the self area without making one or more of these four errors. Now we are never trying to make one of these errors and we certainly do not make an error every time we do something. So what makes us make the error in the first place? Well we often make the error because we are in one of the following states.

Four States or States of Being (The Stress)

The four states of being or stress are as follows:

1. Rushing: Rushing is going faster than you're used to going or trying to do two or more things at once. It's the end of the day and you have about fifteen minutes of work to complete a project and only ten minutes to do it in. So you go a little faster than usual and this increases the risk of injury significantly. Going faster than you usually do doesn't mean you are going to get hurt only that the odds of getting hurt have increased. So have the odds of making a quality or productivity error.

2. Frustration: Things are not going well and the emotions are running high. You can't seem to get the nut to break loose so you start jerking on the wrench and it slips off the nut. Possible using some penetrating oil would have solved the problem but frustration had already set in and clear thinking was out of the question.

3. Fatigue: For any number of reasons we are simply tired. Lack of sleep, extended work hours, high exertion, boredom and a whole host of other things can cause fatigue. When we are fatigued our motor skills and mental alertness diminishes. We start making errors we would not normally make. Like driving when we are tired. We convince ourselves that we can keep going (mental error) and we have trouble keeping the vehicle in the center of the road (motor skill problems). We are trying hard but the car seems to constantly move over close to the center line and then the shoulder and we go back and forth. We know we are tired but we do not know when we are too tired and the next thing we know we are on the shoulder or over the center line and it is only a matter of chance what will happen next.

4. Complacency: With complacency we have just become numb to the hazards. We see complacency everywhere. Even when the hazardous energy level is very high, complacency can and will set in. We read a map while we are driving. Making matters worse is the fact that our brain works against us. While we could discuss for hours the brain activity we will hold that for another day. What we need to know for now is that the brain will move activities that over time produce no negative results into an automatic mode. This allows the brain to scan for things that could hurt you or things that do not seem normal or are out of sequence. For example you will not remember your drive home from work. You must have stopped at the stop signs but you don't remember. That activity was moved into the automatic mode.

There are other states like depression, elation, illness, fear and panic that can take your mind and eyes off the current task but the four most likely to cause us trouble on a day to day basis are rushing, frustration, fatigue and complacency. Most of us will be in all four of the states at one time during a day.

There is a pattern to injuries in the self area mentioned above. It works like this. When you make one of the four errors you do not actually get hurt every time but you do increase the likelihood of an injury and the potential severity of that injury every time. That increase in probability and severity is illustrated by the change in the risk triangle shown in Illustration #2 below.

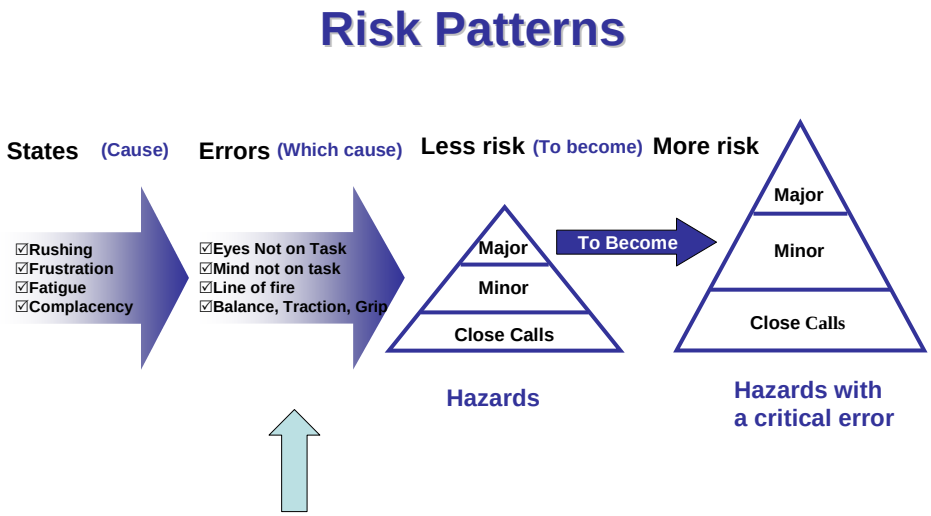

Figure 2. Risk Patterns

This illustration shows the risk pattern involved in the great majority of injuries and it doesn't matter where we are: home, work or on the road. The arrow points to the errors and this is where most of the safety training we receive is directed. Be careful, follow directions, watch what your doing, all of this is good advice, but it does not increase safety skills. It may or may not increase awareness but awareness is lost in the blink of an eye when some external or internal stress is added to the equation. For example if you have ever burned yourself on a hot grill or a

hot pan on the stove (most of us have at one time or another) it wasn't because you were not aware that it was hot. Awareness is affected by our current state of being much more than our intelligence, training or knowledge.

Hazard Awareness

Often an organization will try to combat complacency with safety awareness training. There is an endless supply of awareness training available on the market and organizations can and do design their own awareness training. While awareness training can be helpful it is far from the solution. We all know the grill is hot but every year or two we burn ourselves by touching the hot grill. The same can be said for the stove. We do not need someone telling us the grill is hot. We know the grill is hot because we are cooking on it and we probably even lit it. Awareness is an immediate thing – Are we aware of the hazards around us right now? In injury causation the only thing that counts is awareness in the present not the past or future. If anything draws our attention away from the hazard it is only a matter of chance whether we come in contact with the hazard or not. Awareness training given last week is of no help today. We need safety skills and awareness to avoid injuries not just awareness.

Telling someone to be careful or drive safe is a nice gesture but almost useless as an accident prevention tool. Do we really think that they intended to drive unsafe before you told them to drive safe? You do not need a wish for good luck to help you prevent injuries you need safety skills. The key to developing safety skills and fighting the complacency issue can be found in learning the four critical error reduction techniques below.

Critical Error Reduction Techniques

With respect to developing safety skills we should note that employees need a comprehensively designed training course not just a motivational session. Improving safety skills takes a little work on their part also. Listed below are four safety skill development techniques that can help prevent injuries. While the techniques are much more effective when taught properly you can learn a great deal about yourself and your personal safety skills by practicing the following critical error reduction techniques. What we are doing here is moving the arrow in illustration #1 to the left moving from an error focus of safety training to focus the training on something more tangible, in this case the state. Training directed toward the error involves relying on awareness and to some degrees a little luck to improve safety performance. What we are trying to do by focusing the training on the state is moving from the limited effectiveness of awareness and luck to a more skill based focus. In effect we are moving from luck based safety training to skill based. Now this type of training does not replace all the technical training required to provide a safe and health workplace. However we all know that knowing the rules and how to do an activity properly does not always drive us to positive safety performance. We all know the speed limit on the interstate; we are able to drive the proper speed but are often motivated to exceed the speed limit. The focus here is on better safety skills. Listed below are the four critical error reduction techniques.

1. Self Trigger on the State to Prevent or Avoid Making the Error: This is something many of us do already. We get so frustrated with something that we just stop and walk away for a while before coming back to the task later. The problem is that we may not trigger at all or soon enough without practice. We know when we are in a rush, becoming frustrated and when we are tired. We can learn to trigger on one of these states to help prevent making one of the four errors that get us hurt. Even when we have to rush we can use the realization to improve our eyes on task and mind on task safety skills to increase alertness and focus extra hard on the task at hand. This technique works very well on the first three critical errors but has limited effectiveness on complacency. To combat complacency we need some way to drag the activities that we have

become complacent about back into the brains alert center (awareness). That is what the next three CERTs are about.

2. Analyze Close Calls and Small Injuries to Prevent Big Ones: Learn from our OOPS! When we first start trying to trigger on the state to prevent the error we may still make some mistakes. It takes time and practice to improve safety skills. So while you're working on improving we do not want to miss the opportunity to learn from our mistakes. Often when we make a mistake we are just hoping no one we know saw us make the mistake. We need to analyze those errors and close calls to see what states were involved and if it wasn't a state maybe it was a habit we need to work on. It takes practice but is very effective at controlling the frequency and severity of injury.

3. Observers Others for the State to Error Patterns: Here is where the most help with complacency can be found. When we observe others in the state to error pattern we know something serious could happen so we can do the following:

a. *Get away from them to avoid being caught up in their at-risk behavior.* For example, when you see someone driving erratically while trying to read a book (this does happen) and drive at the same time. Getting out of their way and avoiding them may be the best defense against injury. The driver is obviously very complacent.

b. *Simply recognizing that they are reading and driving is increasing the risk of injury should help you realize that you do not want to do the same thing.* This should give you a strong boost to not do the same thing and avoid becoming complacent yourself. Maybe it's time to stop driving and checking a map at the same time. Your driving could be the same as theirs when you're paying attention to the map instead of the task of driving.

c. *You will also see the state to error pattern in your co-workers before they will.* It is always easier to see the pattern in others than ourselves and this gives us a great opportunity to intervene before they get hurt and give them a hand. This not only helps the co-worker but it also helps us to avoid complacency.

4. Work on our Habits: Personal safety skills can be improved like looking before you move and always checking your footing. Try to always move your eyes before you move your body. When you bump into someone instead of just saying excuse me why not think about the fact that you or they must have moved without looking first. Moving your eyes before you move your body (or car) is your best defense against injury.

Recognizing the patterns that cause injury, like how rushing causes eyes not on task or mind not on task, will help you to spot situations with increased risk for yourself and others. If you practice it enough, it will help you become more aware of these patterns for yourself.

The Three Attributes of a World-Class Safety Program

I'm often asked what it takes to be world-class in safety performance or what it takes to have a safety culture? There appear to be three things all world-class programs have and I have listed them below and in Figure 3. If you have all three, it's a pretty good sign that you're doing things right.

First, you have to have a strong traditional safety program. Compliance is king here, and I often call this your safety "climate" rather than your "safety culture." This includes written programs, policies and procedures and how those policies and procedures are followed. You find out how good your traditional safety program is by auditing to set standards. You can do this internally or you can have someone from outside audit your program. It is a simple way to look at what you say you do and checking to see if you actually do it. This would also include inspections for unsafe conditions and discipline when appropriate. Most of us have a lot of work to do to just get our traditional programs up to compliance level. There are actual computer programs that can help you measure your safety "climate."

Second, you need some type of observation program. Companies with first rate safety programs introduce an observation process, with management and workers' input, to watch out for at risk behaviors. There needs to be teamwork. The best companies, safety-wise, encourage workers on the floor to perform safety observations on a peer to peer basis and also accompany the supervisor and safety director on their rounds. Those observed committing at risk behaviors aren't disciplined but are part of a discussion on have to correct the observed at risk behavior. This process develops "habit strength" for safe behaviors. This is not an audit program but a behavioral observation process that includes both employees and management in the process. Observing employees to assure they know how to do their job and have the tools necessary to perform their tasks safely. Your looking for gaps in the system and at the same time your reinforcing safe behaviors and intervening when at risk behaviors are observed. See stages three and four above. Remember that habit strength can be lost under stress and who doesn't have some level of stress these days. So observations are not enough to deal with all the behavioral issues particularly those actions taken out of habit or are unintended.

Third, employees need advanced safety skills and safety awareness. In order for all the aforementioned points to be truly successful, employees need to be taught the right "skills" in order for them to be able to keep themselves safe when the system breaks down and in any situation home, work or play. Without safety skills the system will continue to fail under stress because some will loose the habit strength developed through observations. This is what was missing in the five stages. We don't expect that if a would-be golfer reads the golf rule book that he will automatically be a better golfer. They need practical, relevant and easy to understand skills to manage themselves effectively.

World-class safety performance (safety culture) is not just the dream of some wide eyed college graduate or recently appointed safety manager. World class safety performance is a very real possibility. Wouldn't it be wonderful if your company was the benchmark company by which others in your industry measure their safety performance?

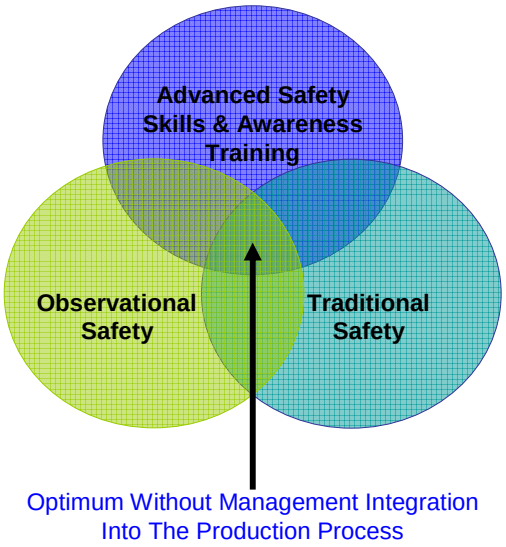

Figure 3. Three Attributes to World Class Safety

Summary

Companies are finally beginning to understanding that safety at home, on the highway and at play are just as important as safety at work. Just take a brief look at the data on deaths and you find that statistically the safest place to be is at work. The safety skills mentioned above work everywhere and are not limited to just workplace safety.