Session No. 515

The ART (Assessing Risks Technique) of Injury Reduction

Sherry Dixon, CSP

Do you have situations in the workplace where one person thinks the job is safe and others do not? Do you have jobs stopped because safety is held "hostage"? Do you have jobs where the worker and the supervisor have differing opinions on whether or not the employee is at risk? Do you have situations where no one takes the time to identify the risk and the job is done because it has always been done that way?

The ART (Assessing Risks Technique) of Injury Reduction is a logical, less subjective process in determining what is risky. The ART process lessens the use of personal opinion and similar subjective thinking and introduces a more objective process to better align the worker and supervisor in determining the risk level of a job task. The take-a-way with this process is a risk assessment tool which will enable the employee both at home and at work to analyze a job task, mitigate the risk and determine a safe solution.

Throughout industry, accidents which result in injury occur and the root cause identifies that the employee was in the line of fire, used unsafe work practices or bypassed a safe procedure to get the job done. Safety professionals are faced routinely with situations where employees have put themselves or supervisors have put employees in harm's way to get the job done. Working under the premise that no one purposefully tries to get themselves or others hurt while doing their jobs, one group of safety professionals and union officials met as a team to address this issue.

The team's objective was to answer the question "What is it that we have always done that is no longer an acceptable risk?" The team looked at several injury prevention training programs with companies who either had excellent safety records or who had consistently reduced their accident incident and severity records.[1] The team used parts from the training programs to develop the ART concept and a training program to educate interested parties on the concept. This training program will explain how, why and when to use the ART Tool.

---

[1] International Paper Louisiana Mill "*Safety Awareness Training*", Author: Moe Marqus, June 21, 2000; MeadWestvaco "*Hazard Hunter*" Author: Jim Roughton; "Hazard Awareness Training", Author: A. John Martin, Jr., July 18, 2006

In every situation, at home or at work, people have a *personal risk tolerance*.[2] This personal risk tolerance is influenced by a three factors: Personal factors, Situational factors and Organizational factors. Personal factors include knowledge, skill, age, physical ability, and experience (negative and positive). Situational factors include stress and control. Organizational factors include the safety system, leadership behaviors, and peer behaviors.

How we decide what is risky is influenced by Personal factors. For example, an individual's knowledge of a particular activity will influence whether or not they take a risk. A person who has never operated a table saw may find that cutting a piece of lumber on the table saw is extremely dangerous and intimidating. However, an experienced carpenter, who operates a table saw routinely, would see the task as a low risk because of the knowledge and skill that he or she has based on past experience of knowing how to do the task without getting injured.

There are some of may look at bungee jumping as a high risk activity. However, for someone who has participated in bungee jumping, the experience may be rated as low risk because of their positive experience with the activity. Those who have participated in a bungee jump would know about the amount of time that is invested in inspecting the equipment, instructing the user on what to do for a safe jump, etc. Of course, it only takes one negative experience to influence would-be bungee jumpers because usually one bad experience is fatal.

Age may influence our decision on whether or not to take a risk. With age most of the time, comes wisdom. Younger employees who have not witnessed accidents and who feel they are invincible may choose to take a risk when older, more experienced employees, who have witnessed what could go wrong, may choose not to take a risk.

One's physical ability is also a factor that influences one to take a risk. A man with normal upper body strength may not hesitate to lift a box when conversely, a female who does not have similar upper body strength, would not even attempt the lift.

How we decide what is risky is also influenced by situational factors. Safety may be paramount in routine circumstances but when the machines are down and the product cannot be processed, safety may be pushed to the wayside over productivity.

How we decide what is risky is influenced by organizational factors. The safety system must be in place to discourage at-risk behaviors. Formal leaders, supervisors for example, must exhibit that safety is built into the organization and not an "add on". For example, if a supervisor looks at the lockout process as something that keeps the work from going on instead of being a part of the work, they may be exhibiting that safety is an inconvenient add-on to getting the product out the door. That is the downside of giving safety and number i.e., "Safety is #1". If safety is number 1, it can be number 3 or 10. Safety should not have a number – it should be built in to every step of a safe production process.

Peers are also influenced by the behavior and example set by an informal leader in the organization. If union officials or senior operators bypass safety or choose to take shortcuts, they are setting an example that at-risk, time-saving behaviors are acceptable.

---

[2] Weyerhaeuser "*Reducing Personal Risk*" Author: Susan Haworth, July 21, 2003.

The point is that how we decide what is risky using only our personal risk tolerance experiences can put us and our co-workers in harm's way. There is another way, one that is less subjective and puts everyone on a more level plane to determine and minimize risk.

This other option is ART, the Assessing Risks Technique tool. This tool uses two broad categories to consider and then three sub-categories in each broad category.

The two broad categories are probability and severity. Probability deals with three sub-categories: Unlikely, Likely and Very Likely. "Unlikely" means that the incident is not going to occur. "Likely" means that the incident may occur and "Very Likely" means that the incident will occur.

The second broad category is Severity. Severity also deals with three sub-categories: Marginal, Critical and Catastrophic. "Marginal" means that if an injury occurs, the injury will be classified as a first aid or a minor injury. "Critical" means that if an injury occurs, the injury will be classified as one needing medical treatment or a lost-time injury. "Catastrophic" means that if an injury occurs, the injury will be classified as a disabling or fatal injury.

The ART tool is illustrated as a matrix in Table 1. The point on the ART tool matrix, at which probability and severity intersect, is the risk code. At a risk code of 1, the employee can easily determine a safe solution without any intervention. At a risk code of 2, the employee may need some assistance to determine a safe solution. At a risk code of 3, the employee definitely requires some intervention to determine a safe solution.

PROBABILITY	Unlikely	Likely	Very Likely
Marginal	1	1	2
Critical	1	2	3
Catastrophic	2	3	3
SEVERITY	The intersection of PROBABILITY and SEVERITY in the chart above equals the Risk Code.		
Risk Code 1 - Proceed with caution			
Risk Code 2 - Further evaluation/consultation should be considered.			
Risk Code 3 - STOP - Determine an alternative solution			

Table 1. Assessing Risks Technique (ART) Tool

Let's try using the ART tool on the following job task. The job task involves jacking up a car in order to go under the car and work. The only tools immediately at hand to raise and hold the car up off the ground are two portions of concrete blocks. Before starting the job, we ask ourselves two questions. The first question helps us determine the hazards: "How can this job hurt me or my co-workers?" The second question helps us determine the safe solution to reduce the risk: "How can we keep from getting hurt?" Using the ART tool, let's determine the risk code.

First, we will determine the hazard. The hazard is that the car would fall on us while we are under the car. Second, let's determine the probability that an injury would occur. Since concrete blocks would not offer much stability in holding the car up off the ground, the probability would be "Very Likely" that the car would fall. Third, let's determine the severity of the injury should the car fall on us. Since we would be under the car and the car would fall on top of us, the injury would be "Catastrophic". Therefore, the risk code would be "3".

The last step is to determine the safe solution. The safe solution would be to use jack stands or a rack instead of concrete blocks to raise and hold the car off the ground. If jack stands or racks had been a part of the job task from the beginning, the probability would have been "Unlikely" and the process could have stopped there because although the severity would not have changed, influencing the probability reduced the risk to one that is more acceptable.

Instead of having the risk determined totally by the person "who has been there for a long time" and has "always done it this way", more objectivity is introduced. Additionally, if the risk code is 2 or 3, both the employee and the supervisor, either have an option to or be required to have others intervene in determining a safe solution. This removes the "production over safety" and "safety held hostage" scenarios that are perceived or exist in the workplace today.

The ART tool is essentially moving the thinking process from, "I'm not going to get injured today"to"What I am going to do not to get injured today?" The ART process takes us from being passive or reactive to preventive. The ART tool then allows a more objective way to determine the risk level. Finally, the ART process allows both the employee and the supervisor to work together to determine a more acceptable risk.

The purpose of the ART tool is not to replace but enhance other hazard recognition tools currently being used (e.g., JSAs, JHAs, SOPs, SOGs, Lockout/Tagout, Confined Space Permits, etc.) The ART tool can be used for both routine and non-routine job tasks**.**

We have learned that we perceive risk differently, many factors influence our decisions and by taking action to approach hazards, assess risk and plan on doing the job safely using the ART tool, we can add another tool to the safety tool kit and prevent injuries.