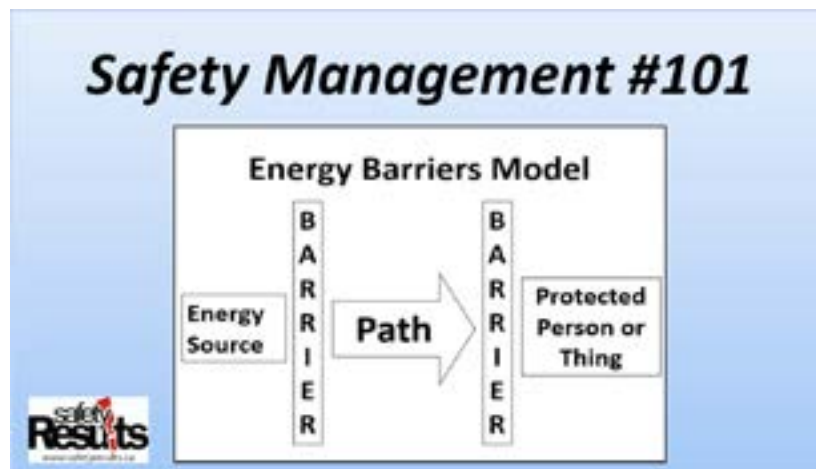


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**Making Safety Personal #101 - "Don't Touch The Spiny Thing"  
The Energy Barriers Model**  
Article by Alan Quilley CRSP



### Energy – Pathway – Barriers

When thinking about causation and how people get hurt, one has to realize that it's all about Energy Release and/or Not Having Enough of our Essential Energy needs met. People get hurt when the amount of energy they need to sustain their lives (Oxygen, Water, Food) isn't available. We also get killed or injured when an energy that is larger/stronger than our body's capacity to withstand it hits us.

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## Energy Needs

Let's focus on the unsupplied Energy needs for a minute. It's said in the "Rule of Threes" that humans can live 3 minutes without Oxygen, only 3 days without water and 3 weeks without food. As a generalization it solidifies the idea that we need these three things to survive. If our work puts us into a situation of no oxygen (Confined Space Entry) or no water or food (stranded in the desert or on the ocean in a life raft) we will predictably and surely die. So if we're to be safe and manage our risks we need to at very least ensure our essentials of life are provided for. There are people on our planet entirely focused on finding water for themselves and their family today...and every day. It's essential for their existence. My guess is that if you are reading this, you are one of the very lucky ones who isn't doing this.

## Enough Energy to Hurt Us

The second part of the Energy theory is that people are injured when an energy that is large enough to go "past our body's capacity to withstand it" hits us. This contact of BIG energy is what causes our injury. The list of Energies we are exposed to is pretty universal.

1. Mechanical Energy
2. Electrical Energy
3. Chemical Energy
4. Kinetic Energy
5. Potential (Stored) Energy
6. Thermal Energy
7. Acoustic Energy
8. Radiant Energy
9. Atmospheric/ Geological/ Oceanographic Energy
10. Biological Hazards

Not all energy is large enough to cause us a problem. Our bodies are built to withstand a certain level of exposure to most things in our lives. A bit of thermal energy is ok...a lot is not. A bit of sunshine doesn't create a sunburn but a lot does. A small electrical charge won't hurt us. That's why you can put your tongue on the two poles of a 9-volt battery and not die...but don't try this with the white and black wires of your 110-volt electrical house wiring. In this model, energy needs to be large enough to be a problem otherwise it's not a threat to your health or safety.

## Finding Its Way to You or Your Things

Energy needs to come in contact with you or the thing that will be damaged to be any concern to us at all. We call that process finding a Pathway. Electricity in the wall behind a properly designed wall cover (it is called a Barrier...we'll get to that) is only a problem if there is a Pathway created from the source to you. Many of us have experienced creating that Pathway unintentionally or intentionally. In North America, many children have stuck a thing (fork, knife, safety pin) into the 110-volt socket just to see what would happen. Fortunately, most of us live through it and live to NOT do it again. Sometimes we walk right into the energy; sometimes the barrier breaks exposing us to the harmful energy. Sometimes the energy is released by someone else's actions or inactions. The Pathway can be managed in some ways. The best way is not to create a possibility.

## Don't Touch the Spiny Thing

Finally, we get to the subtitle. My wife and I live on an acreage. It's a small "executive size" just less than three acres. One of those acres is landscaped with trees, bushes, rock gardens and LAWN. This requires me to mow the lawn and in the winter plow/snow blow the snow from the driveway. The only real solution to these challenges was for us to buy a tractor capable of doing these tasks through the various attachments available. My 23-horsepower diesel Massey Ferguson tractor was purchased with a snow blower, a 5 foot three blade mower and a blade for plowing. I bought this tractor from a friend who is in the business and that friend also

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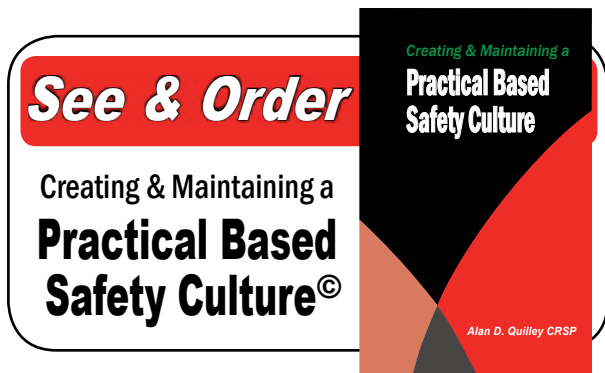
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Alan D. Quilley CRSP

knows that I am a musician and has many times seen me play in my band (this will all make sense eventually). Now I have up to this point in my life operated a variety of powered mobile equipment (forklifts, cranes, track mobiles, trucks etc.) so operating equipment wasn't going to be a new experience. I however have never owned a piece of equipment anything like this tractor since I was "city born and raised."

The day my tractor arrived my friend came to the delivery and personally handed me the keys to my new Tractor and said "Congratulations Al on your Tractor...be careful of the PTO." Some of you reading this will know that a PTO is a Power Take-off. The term basically refers to the mechanical design which "takes power off" a power device.

In the case of my tractor the power device is the diesel engine, and the gears and shafts on the attachments are the way in which the power is "taken off."



So with my friend's warning to me about the PTO, I couldn't resist making a bit of a joke of it by saying, "I know what BTO is (referring to the rock band Bachman Turner Overdrive)." Then I asked, "What is a PTO?" My friend quickly responded, "It is the spinny thing, don't touch it."

A study of farm safety tells us that far too many farmers are guilty of and have been injured by their equipment's PTOs. After this memorable exchange, the Energy/Barrier model's pathway became crystal clear to me. Human behaviour often puts us in a place where we actually create the pathway.

## **Eliminate to Manage Risk**

In the hierarchy of controls used to manage hazards (energies), elimination is always the most effective treatment. When faced with a hazard and if we can remove the hazard altogether, logically the risk has gone away.

The hierarchy of hazard controls, in order of decreasing effectiveness, are usually described as:

1. Elimination
2. Substitution
3. Engineering
4. Administration
5. Personal protective equipment

In our energy barrier model, if we can eliminate the energy or substitute it for less powerful energy, we are indeed reducing the risk our workers face.

## **Remove or Move the Target**

In the Energy/Barrier Model, the target of the energy travelling the pathway is usually the person or thing we are trying to protect from the harmful energy. Strategies that manage risk by moving the person away from the energy or the energy away from the person are classic in our risk management processes. Simply moving the human away from the energy source can have the effect of eliminating or minimizing the risk. The opposite is true where we placed the energy far from humans. This management of proximity between humans and energy sources is a very effective way of managing risk and making our work safer.

## **When All Else Fails, Add Barriers**

There are times when our work or play puts us in very close proximity to harmful energy. In the model on the first page of this newsletter, there are two opportunities. First place barriers to minimize and/or deflect the harmful energies from hitting the target. Some of the most effective barriers we can put in place are those places closest to the energy source. These have the effect of containing the energy. Typical examples of these barriers include guards, ergonomic designs, and warning signs. These need not be only physical things; they can indeed be knowledge base. In the previous

example, “don’t touch the spinny thing” was a warning from my friend in increasing my knowledge of the dangers present. This is a very valuable barrier and works as long as I’m compliant with the warning. In examples of the use of barriers, usually “more is better.” Obviously, we can take this to an extreme and barriers in place that make getting our jobs done impractical. In the case of things we do in the name of recreation and play, putting too many barriers in place would take the fun of our activity.

According to Erik Hollnagel - Barriers and Accident Prevention, the following type of barriers are available to us:

- Material barriers - physically prevents an action from being carried out, or prevents the consequences from spreading
- Functional (active or dynamic) barriers - hinders the action via preconditions (logical, physical, temporal) and interlocks (passwords, synchronization, locks)
- Symbolic barriers (perceptual, conceptual barriers) - requires an act of interpretation to work, i.e. an intelligent and perceiving agent (signs, signals alarms, warnings)
- Immaterial barriers (non-material barriers) - not physically present in the situation, rely on internalized knowledge (rules, restrictions, laws)

### **Personal Protective Equipment**

The second opportunity to put barriers in place is close to the person or thing we are protecting. Classic examples of personal protective equipment fall into this category. In this case the reason it is the least effective is we have let the energy come very close to the protected person or thing. In actual fact, all we’re really doing is reducing the impact of the energy and having that energy strike the personal protective equipment rather than the human. In the case of our vehicles, our 5 mile an hour bumpers on our cars that we’ve engineered to absorb energy is a perfect example. The energy actually has to hit our bumper to make the design work. If the energy is not too large, then the bumper will protect the rest of our vehicle.

### **Safety Is All About Not Letting Energy Hit Us**

If you look at the many classes of personal protective equipment you’ll find all they’re really doing is hardening the target or filtering out/ deflecting the energy that is already there. This is why personal protective equipment is the least effective of all hazard management strategies.

So there you have it. The energy barrier model recognizes that we are hurt when energy hits us or we don’t have the energies available to us that sustain our health and life. When we’re managing safety through the physical or the behavioural, it is important to always analyze what we’ve done to reduce the chances of the energy barrier model ruining our day.

### **Stay tuned for news of the release of Series 2 of our CRSP Exam Prep Multiple Choice FlashCards!**

Alan is busy working on a new series of our wildly popular Multiple Choice FlashCards. Preliminary thoughts are that they will be ready early August. Watch our site and this newsletter for more information.

### **Become a CSI!**

### **Critical Safety Investigator Workshop**

Join us for our C.S.I. Workshop, taking place in Sherwood Park, October 1 - 3, 2018!

Incident causation and investigation is much more than a simple pile of neatly lined up dominos or simply classified as “root” and immediate. Learn the most up-to-date techniques from an expert investigator! If your job includes investigating hazards and downgrading incidents, you owe it to yourself and to the safety of those around you to learn how to do this efficiently and effectively.

For more details and registration, please visit the following [page](#).





## **Making Safety Personal Presentations**

Alan was recently asked to prepare a 20-minute presentation to spark some thinking and help motivate people to continue to work safely. No small challenge...but he pulled it off!

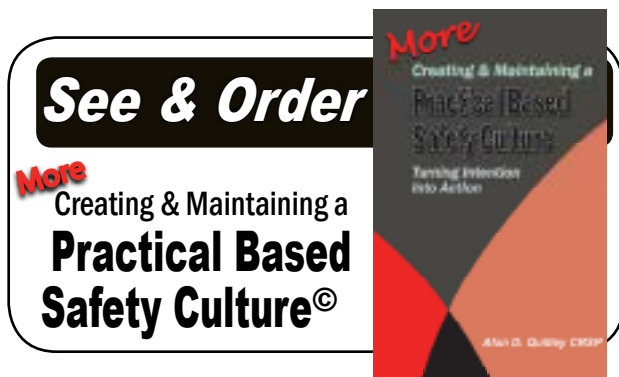
We can now offer our "Making Safety Personal" in a 20 – 60-minute format to fit your agenda.

Contact [Marie](#) today to check availability. Let us help you make your next safety meeting or event powerful and meaningful and...oh yeah... we'll have some fun along the way!

## **CSSE Edmonton Chapter CRSPEX Study Group Sessions**

The next Edmonton CSSE Chapter 2018 Study Group Sessions has been scheduled for September 5 - October 13.

Registration for the study group opens two to three weeks prior to the start date. For additional information about the course, please contact Trevor Johnson at [tjohnson@systemera.ca](mailto:tjohnson@systemera.ca)



## **On The Net**

From COS Magazine:

[\*\*\*Women's group aiming to boost gender representation in safety profession\*\*\*](#)

[\*\*\*Health and safety violation results in manslaughter conviction - The accused's behaviour was a 'marked and substantial departure' from that expected of a reasonable person.\*\*\*](#)

From the BCRSP

[\*\*\*Studying to become a CRSP? Ensure you know the Rules of Professional Conduct you'll need to sign upon your success.\*\*\*](#)

From Bigthink.com

[\*\*\*How to spot high-conflict people before it's too late\*\*\*](#)

## **Andrew Sharman's Total Safety Leadership seminar in California**

Our good friend, Andrew Sharman has asked us to spread the news about a course that he is presenting in Pasadena, California. The course, "Total Safety Leadership: From Accidents to Zero" is taking place on August 7 - 8, 2018, at the California Institute of Technology. It is described as an innovative, practical, interactive approach highlighting the essential leadership, culture and behavioral aspects of workplace safety to systematically move organizations From Accidents to Zero. For more information and to register, please visit the link [here](#).

## **Compliments for our CRSP Exam Prep Workshops!**

"I passed! Thanks for the prep course! It was really helpful for directing me to the right way of studying. Best of luck with your courses and many thanks to Alan and Marie!"

"The materials provided by Safety Results were truly of benefit during my study time. Each of the sections adequately covered the material needed and the class room time offered added clarity on the testing process and study plan structure. The networking that took place during the course was also of benefit as some of us when on to form a study group".

"Thank you again; another successful candidate thanks to Safety Results!"

"I got confirmation from the BCRSP that I passed! I want to thank you for your help and the prep course. It was a huge reason for my success".

Thank you all for your fantastic comments - we really appreciate receiving testimonials such as these!

Congratulations again!

## CRSP EXAMINATION PREPARATION WORKSHOPS 2018

Sherwood Park	July 13 - 15
Calgary	August 15 - 17
Sherwood Park	September 21 - 23
Sherwood Park	November 28 - November 30
Orlando (Kissimmee), Florida	December 18 - 20

Our intense 3 day CRSP Examination Preparation Workshop fee is \$999.00 + GST. (Special price on our Kissimmee, Florida Workshop of \$799.00!) Here's why we think we can help and why it's important to research fully when you are researching CRSP Examination Preparation Workshop providers and their instructors.

Our Workshop includes the following:

- Material updated to the current BCRSP Blueprint
- Our Manual and Workbook (\$600.00 value)
- Our CRSP Exam Prep Multiple Choice (Series 1) and Long Answer FlashCards (\$210.00 value)
- Our Handbook which contains additional practice questions and answers (Handbook is available *only* to participants at the workshop)
- Material is contained in a coveted Safety Results canvas attaché bag which includes pen, highlighter, calculator, notebook for notes and Post-its.
- Lunches and refreshment breaks
- Special offer – We are the *only* workshop provider that has a special offer for participants of our Workshop: If you write the CRSPEX and are unsuccessful, you may attend another sponsored Safety Results Ltd. CRSP Examination Preparation Workshop for a nominal fee. The workshop must be taken within one year of your first workshop with us and further conditions apply - please check with us for more details. If you see other providers with this same offer, it will be because we did it first.

When broken down, the value added features of our Workshops cannot be beat.

What makes us different? No boring lectures here! Alan Quilley CRSP, our dynamic instructor engages participants, truly demonstrating that you can enjoy learning. Sifting through mountains of paper presented in an illogical manner isn't efficient, nor is sitting in a classroom answering hundreds of practice questions. How do we know? Because our students have told us.

Why not learn from an industry leader who actually works with companies, helping them create their Health and Safety programs? With decades of practical experience, highly experienced in Adult Education and the knowledge to help you focus your studies to make your examination writing positive and successful, why look elsewhere? Our business was created and has centered around educating adults in OH&S topics

We don't just teach it, we live it.

Our course format is often imitated but never surpassed. Don't be fooled by cheaper imitations of our process, format and content. Safety Results Workshops are the gold standard of preparation workshops.

For more details and to register, please visit our [CRSP Workshops](#) page. *Please note that if you have registered for a workshop, but not paid for your spot, we are not holding a seat for you.*

And remember that if you are unable to attend one of our Workshops, you can purchase the very same Manual, Workbook, Multiple Choice/Quick Answer and Long Answer FlashCards that our students receive in our Workshops. Visit our [CRSP Exam Prep Materials](#) page for more details!