

# Risk Treatment Strategies

Okay, here we are in the Risk Treatment Chapter, and it's critical that we talk SPECIFICALLY how we can actually treat the risks that we've now identified.

By the way, when I say Risk Treatment that is defined as the process of **modifying Risk**.

I say "modifying" risk, and the way you should read that is Reducing or Lowering or Eliminating that risk!!

Namely, there are 4 specific strategies that you must know how to use to properly address all of your various types of risk:

- **Avoiding Risk**
- **Mitigating Risk**
- **Transferring Risk**
- **Accepting Risk**

Which is the subject of today's lecture!!!



Before we get into each of those topics specifically, I wanted to make some quick comments about risk treatment in general.

**Any Risk Treatment** can produce **unintended consequences**.

When you're considering a specific risk treatment strategy, one thing you have to consider is any **unintended consequences** or **new risks** that might be introduced as part of that strategy.

Brainstorm those potential consequences and new risks, and attempt to address those risks through the way you implement your risk treatments.

The other important thing to remember about whatever risk treatment you implement, is that **risk treatments** should be **monitored over time** to ensure continued effectiveness.

Real quick before we jump into the 4 risk treatment strategies specifically, I wanted to provide a quick definition of all four, so you have a basic understand of where we're about to go!!!

**Avoiding risk** by deciding not to start/continue with an activity that is risky.

**Mitigating/Reducing** the likelihood or severity of the risk event (failure mode).

**Transferring** the risk with to another party (Contracts, Insurance).

**Accepting** the risk by informed decision in order to pursue an opportunity.

## Avoiding Risk

**Risk Avoidance** is an **informed decision** not to be involved in, or to withdraw from, an activity **in order not to be exposed to a particular risk**.

An important aspect of that definition is the word “informed decision”.

You have to do your due diligence, to quantify the risk associated with an event, and then base your decision to withdraw from an activity based on that risk.

From a product quality perspective, risk avoidance looks like **eliminating/removing the risk source**.

We often use the words “**prevention**” in quality.

And the reason that prevention is so important is that we eliminate or address the root cause of a problem, and by doing so, you’re eliminating the risk associated with that failure mode.

We also use this idea of risk avoidance in our everyday life!!

We don’t **swim in a pool** when there is **lightning**.

We make an **informed decision** to **withdraw from an activity** (*get out of the pool*), in order **not to be exposed to a particular risk** (*being struck by lightning*).

We close roads when too much ice/snow builds up. We make an informed decision to not drive on icy roads, to avoid the risk of a collision or an accident.

Businesses don’t engage in illegal activities to avoid the risk. Engaging in illegal activities can come with legal risk, compliance risk, regulatory risk and business risk.

So companies go to great lengths to ensure that they don’t engage in illegal activities, so that they can avoid any exposure to those risks.

Back in the quality world, we design a robust product, to avoid failures and eliminate the risk. By eliminating failure modes, we can avoid the exposure to the risk associated with those failure modes.

We create a robust process, to avoid failures and eliminate the risk. We want to do our best to prevent failure modes, so that we can avoid the risk associated with those failure modes.

Which makes risk avoidance probably the best risk treatment strategy available to us.

## Mitigating Risk

**Mitigating risk** is defined as an attempt to reduce the likelihood of **occurrence**, or the **severity** of the risk.

Remember, risk is quantified as the combination of two factors, Severity and Occurrence.

$$\text{Risk} = \text{Severity} * \text{Occurrence}$$

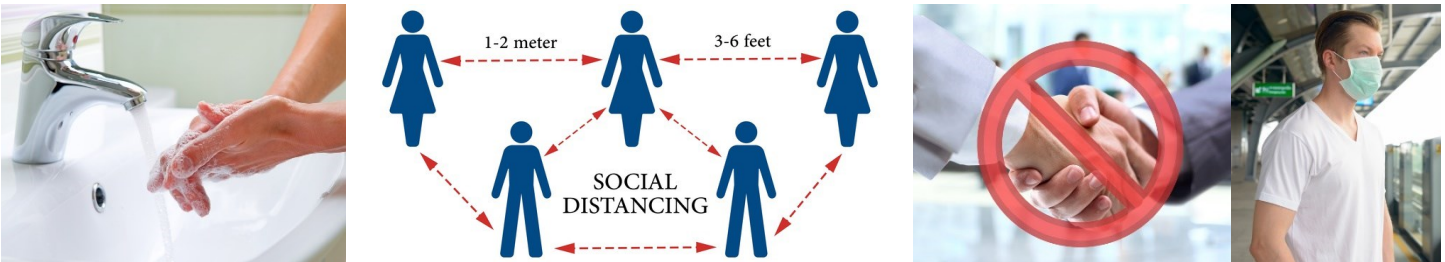
And if you can't eliminate a risk through risk avoidance, the next best thing is to reduce that risk by either **reducing the severity or the occurrence**.

A good example of **reducing the occurrence** of a risk event (failure mode) would be like improving your process capability. By improving process capability, you're reducing defects, which in turn reduces the probability of occurrence of a risk event (defect).

The other example of risk mitigation through the **reduction of the likelihood of occurrence** of a risk event is COVID.

During covid, we implemented various risk mitigations to reduce the probability of contracting COVID, which included social distancing, mask wearing, hand washing and a reduction of physical contact (hand-shaking).

The intention of all of these mitigations was the reduce the likelihood of contracting COVID.

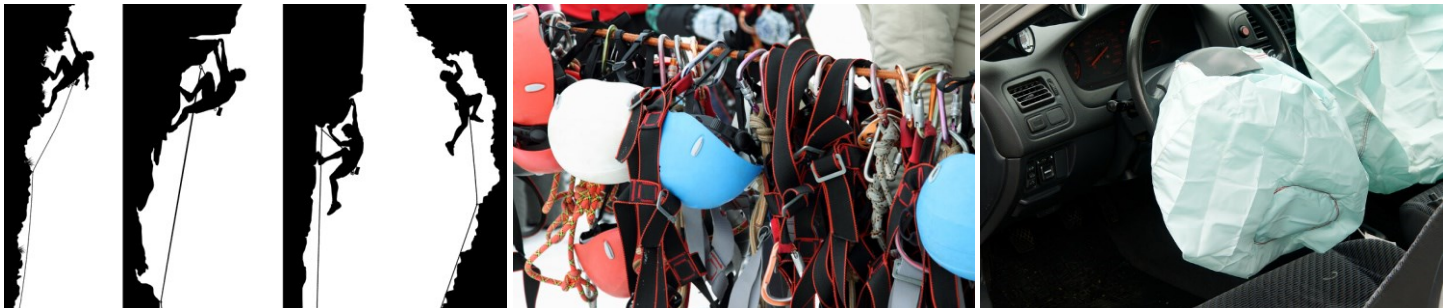


**The other option for mitigating risk, is by reducing the impact or the severity of a risk event (failure mode).**

The best example of this in real life is protective equipment used in sports.

Oftentimes in sports (and in life) we can't prevent collisions, and the next best option is to simply reduce the impact that those collisions have through protective equipment like helmets and pads.

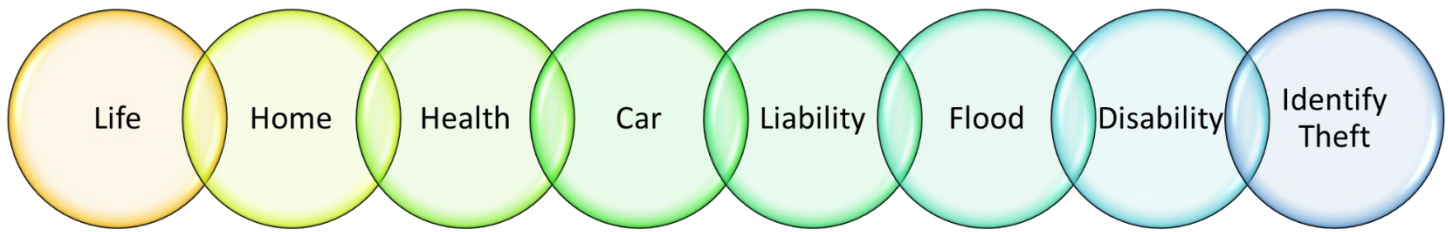
The other perfect example is an airbag. Airbags don't prevent car accidents, but they do reduce the severity/impact of that car crash when it does occur.



## Transferring Risk

The 3<sup>rd</sup> option for Risk Treatment is Transferring your risk to a 3<sup>rd</sup> party. There are two specific vehicles to transfer risk that you should know, and those are Insurance and Futures Contracts.

Possibly the most easily understood example of transferring risk is insurance.



Buying an insurance policy, where it's life insurance, home insurance or car insurance, is essentially a contract that allows you to transfer risk to a 3<sup>rd</sup> party (the insurance company).

For example, one risk we all face is health risk. At any point in life, you could get sick or get into an accident.

And the financial cost associated with health care is very high.

So, one way to transfer that financial risk is to purchase health insurance, so that in the event that you need medical care, the insurance company is financially liable for those costs.

The other financial vehicle for transferring risk is a **Futures Contract**.

A futures contract allows you (as a buyer or seller) of material to lock in the future price of that material.

For example, let's say you're a business owner and your major expense as a business is the raw material you purchase to produce your food products – and let's say that raw material is WHEAT.

If the price of wheat were to increase, that might have a major impact on your business results.

So how can you transfer that business risk? You can buy a **futures contract!**

A futures contract allows you to lock in a specific price, for a specific product, at a specific date.

That same futures contract can be used by the person producing that product (wheat).

If you're a wheat farmer, you know that in the future, you're going to have a large quantity of wheat to sell, and you will need to sell that wheat at a specific price, for you to be able to pay your workers, and pay for your equipment, and make a profit.

So, a futures contract is a way to transfer risk, both for the producer and the consumer!

Here you can see a futures contract for wheat, and that change you see is a result of the war in Ukraine (major wheat exporter).

That war increased the risk on supply side of the wheat business, and that change in risk drove up the price of wheat futures.

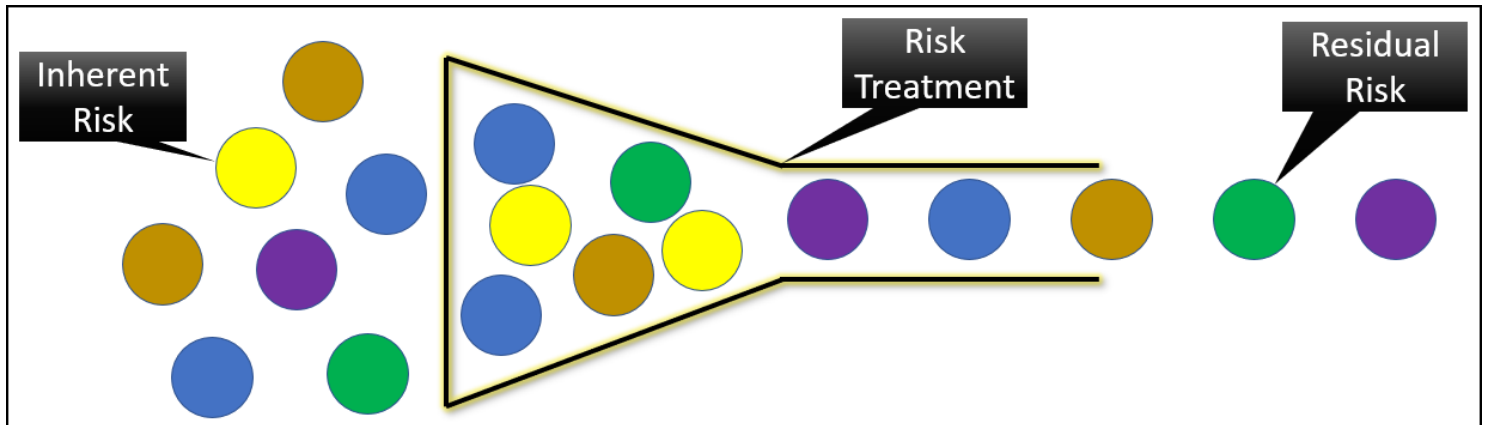


## Accepting Risk

The last and final risk treatment strategy is Accepting Risk.

To understand this concept, you have to understand a different concept in risk called residual risk.

**Residual Risk** is the risk that **remains after all risk treatments** are applied.



As Quality professionals, when we're designing a new product or a new process, we are using a plethora of tools to treat our risk, and in essence, reduce that risk.

**However, there is no such thing as a risk-free product.**

Every product or process, even the best processes in the world, have some element of risk.

This risk is called the **residual risk**, and it's the **risk that remains after all risk treatments are applied.**

And in the world of risk management, we **MUST** accept that residual risk.

Thus, **Risk Acceptance** is an **informed decision** to **accept residual risk.**

So, when you approve and publish a pFMEA (or dFMEA), when you're saying is that you are making an informed decision to **ACCEPT** the residual risk that still remains within your process (or design).

Now, we can't just accept the residual risk, and move on, we have to monitor that residual risk over time, which is the topic of the next lecture on Risk Monitoring.

The goal of risk monitoring is to ensure that your residual risk is controlled/stable/unchanged over time.