SafetyInfo

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Hazard Analysis

Without people, there would be no hazards.

The most important method of identifying and rectifying a hazard is using a hazard analysis, if it looks dangerous, it probably is!

So how do you define a hazard? A hazard is anything that may cause damage, injury or illness, to people, environment or plant and buildings.

There are five traditional ways to control hazards;
1. Elimination
2. Substitution
3. Engineering
4. Administration
5. Personal Protective Equipment

In controlling a hazard, we can use any number of these ways to formulate our risk control, so how come now we have **risk** involved here? ***Risk*** is the child born from the parent ***hazard***, what this means is, that for every hazard you identify, there is an associated risk or risks.

Let us take an easy example, a pedestrian crossing, no hazard here you say, well there is!

Hazards; Cars, trucks, motor bikes, buses; the paint on the crossing can also become slippery when wet! ***The Risk***; we can get struck by a motor vehicle or slip over if the lines are wet. Most people do a mental hazard analysis before crossing, our parents taught us to look left, right and left again before crossing, and we do this mental hazard analysis without even thinking about it, so why can we not do it at work?

Taking into account our example, what do we use to mitigate the risk associated in crossing the road?

We can use ***Elimination***, by eliminating the pedestrian crossing we remove the hazard, but not the risk, as people will still cross the road.

Substitution, we can install a traffic light controlled crossing, this would also take in engineering

Engineering, we can build a raised pathway over the road.

Administration, we can train and educate people to use the crossing correctly.
But, for every control we put into place, there is always a residual risk, the secret is knowing, what the risk is and being able to control it.

Risk:

Risk is something people gamble with every day, even winners eventually become losers.

Staying with our pedestrian crossing example, we will now look at the residual risks from all of our controls.

Elimination; So we have removed the pedestrian crossing, but how often do you see pedestrians darting out in front of moving vehicles? Many times if you sit and watch, the pedestrians think they are taking a calculated risk, it certainly is a risk, but not calculated to be sure, if they thought about the possible consequences, they would wait until the traffic was clear. So we do have a risk remaining, even after the elimination of the crossing, the thing is, we have actually created a bigger risk by removing the crossing, than existed before, this needs to be avoided and much thought needs to be done before initializing the elimination strategy, to ensure that all residual risks are able to be controlled.

Substitution; We can substitute the line marked pedestrian crossing with a traffic light controlled system, we control the motor vehicles and we control the pedestrians, the risk has diminished by control, there is one element of risk remaining that we have no control over, that is human irrationality and unpredictability, someone will cross with the light being red, pedestrian or motor vehicle, an accident will occur. We can only control risk to a certain extent.

Engineering; Using engineering we remove the line marked pedestrian crossing, build a mesh topped walk way over the road, the mesh ensures no one climbs and jumps off the overpass, so has that removed all the risk? Well no! There are still some minor ones remaining, pedestrians could slip and graze a knee, or break a leg or arm, but we have diminished the most serious risk, that of pedestrian being struck by motor vehicles, the remainder is left as an uncontrollable minor residual risk, we know it exists, but are unable to control it.

Administration; Administration is probably the weakest of the hazard controls, as it utilizes training and education, if we train and educate all the pedestrians and all the motor vehicle drivers, to do the right thing, and all used this, it would work well, except we are dealing with humans, and they are unpredictable. Lack of patience, hurry, or just rudeness from a few would negate all the training and bring back all the risk. That is not

to say administration does not work, it does work well, if coupled to other hazard controls.

Personal Protective Equipment; PPE is much underrated, good quality and correct PPE can and will prevent serious injury to a worker. It is wise to spend time researching the various types of PPE available for different types of jobs, a cheap pair of goggles is better than nothing, when a piece of metal is flying of a grinder heading towards an employees eye. The better the quality, the better is the protection for employees. Investigate and do a hazard analysis on every job that is carried out in your place of work, if unsure of identifying the correct PPE, get some safety catalogues and see what is available, for the hazards you have identified.

Try and be sensible when choosing PPE, think how you would feel wearing it whilst doing specific jobs, in other words, do not encase someone in a suit of armor.

Risk Assessments:

In formulating a Risk Assessment, one should always take into consideration the human element and the surrounding area, humans are unpredictable in their actions, factoring in this unpredictability will help to minimize or control the risk, and surveying the wider area will give an overview of what may be damaged or who else might be hurt if the risk control fails.

In order to formulate a sound risk assessment, one needs to be able to look at the bigger picture around the identified hazard, let us say we have had installed a radio tower ten metres high, with four guide wires holding it up. There is also a lot of high risk plant moving close to the tower and guide wires, we could, to minimize the risk of the high risk plant hitting the tower or wires, by installing bollards or safety railing, that would fix the problem at ground level, but in doing a risk analysis, you would need to take into account the height of the tower, and a safety margin, should the cables break and the tower crashed to earth, what would it strike? And how far away? Take in the bigger picture! In doing a risk assessment, make sure that you identify the current task, the identified hazards, the risk identified, the controls required and the level and severity of the risks before and after the controls have been put in place, you will also need a

Risk Register, this identifies every job role and task carried out in your place of work, and these tasks show what the hazard is, the risk is, the level of grading of the risks, the controls required to mitigate the risks and the grading of the risks after the controls have been put in place, these form part of your SMS.

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