How to carry out a risk assessment

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Strategic Safety Systems

I wrote this paper for the benefit of printers but the general principles are applicable in most industries.

Whilst most companies believe that they operate safely, many are unsure of what they have to do to meet their legal obligations with regards to health and safety. Quite often, I get statements like "we've got a safety policy" but then some people are vague about what else they should do.

The key features of any safety system should be that:

- It ensures that you operate with the level of safety that may be reasonably expected
- It is appropriate and sufficient for the size and type of operation you have and the risks involved.
- It satisfies legal requirements

This second point is critical. Systems that are pedantic, complex, excessive (and expensive) are just as ineffective as those that are too lightweight.

Unlike the bad old days, we no longer have long lists of prescriptive rules that have to be followed and are now allowed considerable discretion in how we safely manage our operations. However, we do have regulations that essentially give the title of the topics that must be considered. Whilst writing a policy is often thought of as the starting point of a safety system, this is really a summary of the system. The true starting point is to carry out risk assessments; after you have carried out risk assessments, you know what the risks are and how you are going to control them. I cannot stress too much that the systems must be based on the actual risks. There are many ready-made general systems around that cover areas that are not relevant to printers yet miss risks such as guillotine blade changing or washing up on presses.

Steps in carrying out a risk assessment

Step 1 Identify hazards

Make a list of all the operations in your plant. I tend to start and end at the door; start with unloading paper from a vehicle and then follow the material though storage, transport, etc. If you consider all the material routes, then you will pick up plate making and the other operations.

Then list all the support operations that are necessary. This can get a bit tricky as it is easy to forget some. Support operations include maintenance, such as guillotine blade changing and building maintenance. Because the last part is outside the core operations of your business, and may be contracted out to "expert" companies, it is easy to ignore it but it accounts for many of the accidents I have encountered.

Then list all the risks that each operation entails. Include all risks, even those that are under control, because one of your actions may be to carry out checks that they remain under control. At this point, it is worth recording these on a paper or electronic form. Cover what actually happens, rather that what should happen. In addition to general risks, there may be specific risks such as COSHH assessments. It is normally best to cover these separately, but you should always refer to them in your risk assessment record.

When doing this, keep in mind that the whole idea of risk assessment is to rank risks (so that we can concentrate on the greatest risks first) and then define how we control them at present or identify what we need to do to control them in the future.

The following list gives ideas of some of the risks that must be considered, but it is not an exhaustive list.

Potential hazard	Comment
Machinery	With moving machinery, are there exposed nip or crush, or shear points? Why do they need to be exposed? If the forces are high enough to cause injury, how is risk controlled? What happens if the power fails? How do you recover from this?
COSHH	Will substances which may be hazardous to health be used? Don't forget washing up.
Electrical	Are there likely to be any electrical hazards? Are there trailing cables which may get damaged? Can the equipment be isolated?
Flammable materials	How are these stored and used? Could practices increase the risk of fire? Could the fire spread?
Emergencies	What would happen in an emergency? Can emergency stops be reached from operating positions? What does the emergency stop do? How do you get out of a stuck situation? In a fire, can all people get out quickly? How do you account for people? Who accounts for visitors or contractors? How do people know the system?

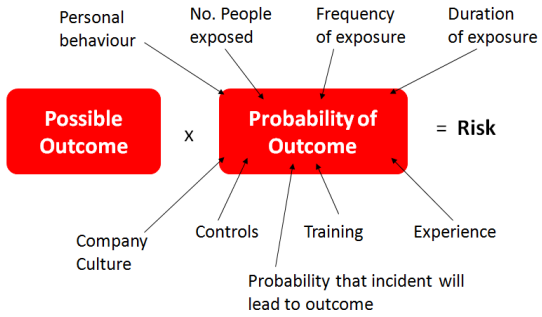
Continued

Potential hazard	Comment
Potential Energy • Falls of objects • Falls of persons	Could objects fall or be ejected? Could people fall? How do you control access to mezzanines, say for storage on pallets?
Other stored energy	Are there springs and accumulators? Pneumatic pipes retain stored energy – are they dumped?
Handling	Is there the potential for manual handling injuries from either process material or change-over parts?
Noise	Is the equipment noisy?
Pressure and temperature	Are there high or low temperature problems? Are there high pressures? What are the potential consequences?
Tools and Equipment	Are tools and equipment used? Can these be a source of injury? Must tools be used to control risks? Can damaged tools or non-working equipment cause loss of control for other risks?
Vehicles	Are vehicles used? What hazards exist? Who uses them? What limitations are there? Do you have pedestrians and vehicles in the same area? Do you have roadways or yards shared with other companies?
Workstations	Could ergonomic considerations cause problems here? (Could be either to the operator or as a result of his actions.)

When identifying risks, consider all modes in which the equipment may be used. Ask "How is it made ready?" and "How is it cleaned?" Typical faults with making ready are to have a key switch which is permanently in the overridden position or to make no provision for it, forcing the operators to override guards. Another fault is to have ineffective protective devices such as nip trips which do not have enough movement; you end up getting caught between the trip and the cylinder.

Step 2 Assess Risks

Risk is the product of the possible outcome of an event and the probability of that outcome occurring. This diagram shows some of the factors that affect the probability.



There is no "right" way to score risks but we need to do this so that we can rank them. All that is necessary is that you are consistent in your scoring system and that it is not too complex.

Scores of 0 (no injury) to 5 (death) and 0 (not expected) to 5 (expected frequently) are probably the simplest system and may be adequate for many companies. For each risk, ask the question "Given the controls (guards, etc.) that we have in place, what do I expect the outcome and its probability to be?" (Again, the comments on actual practice made above apply.) This is really a combination of informed guesswork and any knowledge of the prevalence of injuries from certain risks.

At this point, it is worth putting the risk into order so you can see where the biggest problems lie.

Step 3 Define Controls

These are the methods by which we minimise the risk. There is a preferred hierarchy and you should choose a method as high up the list as is practical.

Position	Control	Comment
1	Fixed guard	Guard requiring tools to remove it
2	Moveable guard	Guard interlocked to machine control
3	Active devices	Trips, light curtains and 2-handed control
4	Controlled operation	eg Restricted speeds or single cycles. These must be supplemented by Position 7 controls.
5	Personal Protective Equipment	Gloves, eye and ear protection, etc. Be careful that these do not introduce a new risk, eg when cleaning blankets, etc., gloves must be made of low strength material otherwise there is the risk that the hand can be drawn in to a nip.
6	Sticks and pushers	eg Hickey picker
7	Information, instruction, training and supervision	Define the safe method of working and then ensure that people follow this. To

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Strictly, items 3 and 4 are not in EEC regulations and I have taken item 3 from another country. However it does make sense to include them in the hierarchy as they require something to happen to provide protection rather than be the physical barriers of items 1 or 2.

Be very wary of item 1. This is really for covers over belt drives, etc., which need access only for maintenance. If you need to gain access to change machine settings, then an interlocked moveable guard is safer. However, be realistic about the controls. The guidance is that the greatest risks should have the most robust controls and spending a lot of effort on controlling minor risks may detract from the higher risks.

When identifying controls, decide how you are going to verify that they work. For example, periodic checks on interlocks need to be recorded.

There may be some actions required and the following table gives types and some examples

Type	Explanation	Example
Establishment	Actions to create a new control or improve an existing one	• Improving guarding • Writing safe working practices • Improving trip so that cylinder stops within travel of nip trip
Maintenance	Actions to ensure that existing controls continue to work	• Periodic checks on interlocks

Whilst it is best to control everything, there may be some risks that cannot be controlled. However, it may not be reasonably practical to control every risk, in which case it is necessary to define how you are going to minimise the residual risk.

Step 4 Implement Controls

There are two parts to this: Physically creating the control and informing people. The latter part may seem obvious, but it sometimes gets missed. Where information transfer is a key part of the control, then you really need to have this written down to ensure consistency and to record when people have been trained or otherwise informed.

Step 5 Verify that they work

This is the part that often gets ignored, but it is critical. Without verification, how do you know if the controls work? It may be that a control is ineffective, or must be overridden to carry out certain functions. In such a case, you must devise new controls to overcome the problem.

Review

It is always a good idea to review your risk assessments occasionally; I recommend reviews every 2 years. However, you must also review your assessments if you make changes that may affect the assessment or if there is reason to suspect that it is no longer valid. Examples of changes are the introduction of UV inks or changing the building around folders which may invalidate any noise assessments.

Paper or electronic records?

For the small to medium company, paper records are adequate, but remember that just having a collection of risk assessments is not enough. Good management practice would be to list the risks in descending order, along with the actions to take. This gets laborious when you have many risk assessments and so electronic systems may be advisable for larger companies. For the risk assessments I carry out for all companies, I always use the SSS-developed risk assessment database as it does this sorting automatically.

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