Risk Based Safety Cultures in Industry: Do <u>You</u> Have One?

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Dr Dominic Cooper C.Psychol AFBPsS CFIOSH RSP
B-Safe Management Solutions Inc, 6648 East State Road 44, Franklin, IN 46131, USA.

What is meant by 'Culture'?

Organisational cultures refer to various aspects of an organisations functioning such as risk, safety, quality, customer focus, production, etc., whereby the over-riding concern is ensuring that *all* the members of an organisation, give priority to that particular 'cultural' topic. However, culture is a term that has different meanings to different people. Although many propose that culture is the *product* of individual and group values, attitudes, competencies, and patterns of behavior…. (HSC, 1993), the most succinct way of defining organisational culture is 'the way we do things around here'. In other words, developing a particular type of culture means concentrating on *what people in an organisation actually do, on a daily basis*, to bring about, support and maintain the desired result. The more that people repeatedly behave in ways that appear to them to be natural, obvious and unquestionable, the stronger that a culture becomes. A strong culture is one where nothing is too trivial or too much trouble as people try to ensure that all activities gets done the 'right' way. As such, the prevailing 'culture' provides a context for action that binds together the disparate components of an organisation in pursuit of a common goal, which serves as a powerful lever to guide the behaviour of people in their everyday work. Although a particular type of culture (e.g. quality) may be dominant, it is made of many separate sub-cultures that interact with each other to the extent that 'the whole is greater than the sum of the parts'.

What is a risk based safety culture?

Safety culture refers to all those individual, job and organisational features affecting and influencing health and safety (Cooper, 1998). A risk based safety culture is where the two separate components of risk assessments and risk management form the basis for developing an organisation's safety culture. In essence this means the hazards associated with each and every process and their associated tasks on site have been identified, the likelihood of the hazard being realised has been assessed, and the potential harm the hazard could cause either to people, property or the wider environment has been evaluated. The required risk control measures have been put in place, and the whole process for each individual risk assessment has been documented. Each risk assessment is made freely available to anyone who wishes to see it, and is reviewed on a regular basis (i.e. every 12 – 24 months) or changed in the light of prevailing circumstances (e.g. new equipment installed; reductions in manning levels, etc.). Importantly, each member of an organisation will also routinely conduct an 'on-the spot' risk assessment before beginning any task to identify any potential risks to their well being and implement the appropriate control measures. This is done with the full knowledge, encouragement and support of every other organisational member regardless of the consequences in terms of less production, the job not being completed within a certain time scale, etc. Although this may sound like idealism, it merely reflects the requirements of the EU Management of Health & Safety at Work Regulations 1992 in all their glory.

How strong is yours?

Ah ha! Some of you will be thinking. 'We do risk assessments! We have put in measures to control risk! And, We review them regularly! We must have a risk based safety culture'. This may be true, but how strong is it? A chemical manufacturing plant also thought they had a good risk based safety culture, but in early 1994 a corroded pump connection failed and caused a substantial release of product that formed a toxic gas cloud covering the site, which then moved into the surrounding area. While the sites emergency services attempted to isolate the leak to stop the gas spreading, the product caught fire, injuring eighteen people and destroying the plant. The HSE's investigation highlighted the fact that a *thorough* risk and hazard assessment might have prevented the incident. Although the rebuilt plant incorporated many improved safety features, and the company

concerned simultaneously improved its safety management systems, it was heavily fined for failing in its duty of care to ensure the safety of employees and others. In this example, inadequate risk assessments had been undertaken; as not all of the hazards associated with the task had been identified or assessed (e.g. knowledge of the life span of the pump connections was not available). Similarly, risk control measures were lacking (e.g. planned maintenance schedules were not in place). Inadequate risk assessments are a common failing in many organisations, as those responsible (usually busy line managers) tend to try to satisfy the bare legal minimum requirements to reduce the time, effort and costs involved. Where this *routinely* occurs, the organisation concerned does NOT have a risk based safety culture, but rather has a '*Satisficing*' culture (i.e. doing just enough to get by).

It goes without saying that every organisation will have some form of early warning system in place to identify and counteract any perceived risks to its business profits. Senior management teams and accountants, for example, will be assessing the risks to their organisation caused by spiralling raw material costs, reductions in share values, new competitors or new products entering the marketplace, etc. They will identify the appropriate control measures (e.g. reduce fixed costs and switch to variable costs to squeeze out excessive operational and overhead costs), and implement them (e.g. outsource maintenance departments). Paradoxically, risks to businesses from a failure to manage the health & safety risks associated with workflow processes or routine tasks are too often ignored. The company involved in the example above was fined £150, 000 (How much product did they have to make & sell to realise this level of profit?). They also lost their reputation with the public and their employees as a safe operating company. They faced compensation claims from the injured persons. They had to suffer lost production caused by the demolition and rebuilding of the plant, and in all likelihood also lost market share from not being able to complete orders. Moreover, their insurance premiums increased substantially for many years to come. All in all, the bill probably runs into millions, simply because of *one* inadequate risk assessment, which subsequently led to a failure to implement the appropriate control measures.

Conducting Risk Assessments

Put simply, the general principles involved in any risk assessment begin with identifying all the hazards associated with a task or activity by considering the Who, the What, the Where, the When, the How and the Why of any work activity. Any potential adverse consequences derived from the hazards identified can be discovered by repeatedly asking 'what if…..' questions. Categorise the probabilities of harm into a matrix: Low (1), Medium (2) & High (3). Do the same with the potential severity of outcome. The degree of risk can then be calculated by multiplying the Likelihood of Harm X Severity of harm. Some also weight the product of this by a similar 'frequency of occurrence' matrix (See Cooper, 1998).

Prioritising your starting point

A good method for prioritising which activities to risk assess first is to use a Realisation Index, whereby the number and type of accidents and near misses are categorised into Technical, Safety Management System (SMS), and Human Error failures (HE). The number of actual types of accident is then divided by its associated number of near misses, the product of which is multiplied by 100 to provide the realisation index. The following chemical industry example divided accidents and near misses into 'hard' (technical failures) and 'soft' errors (SMS or HE failures). The ratio of hard to soft errors was then calculated. Soft errors occurred, one and a half times more often than 'hard' errors. Examination of the 'soft' errors showed that twice the number of 'actual' accidents was related to SMS failures, whereas twice the number of near misses were related to HE failures.

From the resulting index it became apparent that 'inadequate communication of operational information' and 'inadequate standard operating procedures' were high realisation factors, both of which were SMS failures. The HE failure most likely to be realised was shown to be 'errors of judgement', which were related to ergonomic design issues: the installation arrangements for a large number of valves were confusing, because they were all of the same type and size, but were for functionally different purposes. The same formulae applied to the technical failures revealed that the main realisation factor was related to poor maintenance, which is once again

related to an SMS failure (illustrating the interactive nature between SMS, HE & Technical failures). Thus, the realisation index is a useful tool to reveal where your organisation's efforts would be best served, in the first instance.

Assessing Risk Control Measures

Assess your suggested risk control measures via a risk control hierarchy such as ASIRP, which respectively stands for Avoid, Substitute, Isolate, Reduce & Protect. Your first efforts should be to avoid the risk altogether. If this is not possible, efforts should then be made to combat the risk at source by substitution, and so on. Although it is recognised that a combination of control measures may need to be employed, where possible:

1. *Avoid:* Eliminate the hazard altogether to avoid the risk
2. *Substitute:* Change the activity or process to one that is less harmful
3. *Isolate:* Separate people from the hazard or physically guard against it.
4. *Reduce:* Design a safe system of work that reduces the risk to an acceptable level
5. *Protect*: Provide the appropriate PPE, install machine guards, etc.

Always re-evaluate the chosen option to see if the hazard (or aspects of it) cannot be eliminated. Importantly, there is a strong inverse relationship between the amount of managerial effort needed to establish and maintain the above controls. The more an organisation uses Protect as its first, rather than last resort option, the more it increases its operational costs by minimising management's time for dealing with other organisational issues.

Where do you go from here?

If you are entirely satisfied that your organisation has a fully operational risk management system that mirrors that required to demonstrate a good risk based safety culture, you may be in the enviable position of never needing to put into effect any of your sites emergency response plans. Conversely, if you're not satisfied by your organisations safety, health and environmental risk management system, I would strongly suggest that you plan, organise and test your emergency responses as soon as possible, in full light of the knowledge that these will be required sooner than you think.

References:

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