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Human factors role in supporting best practice

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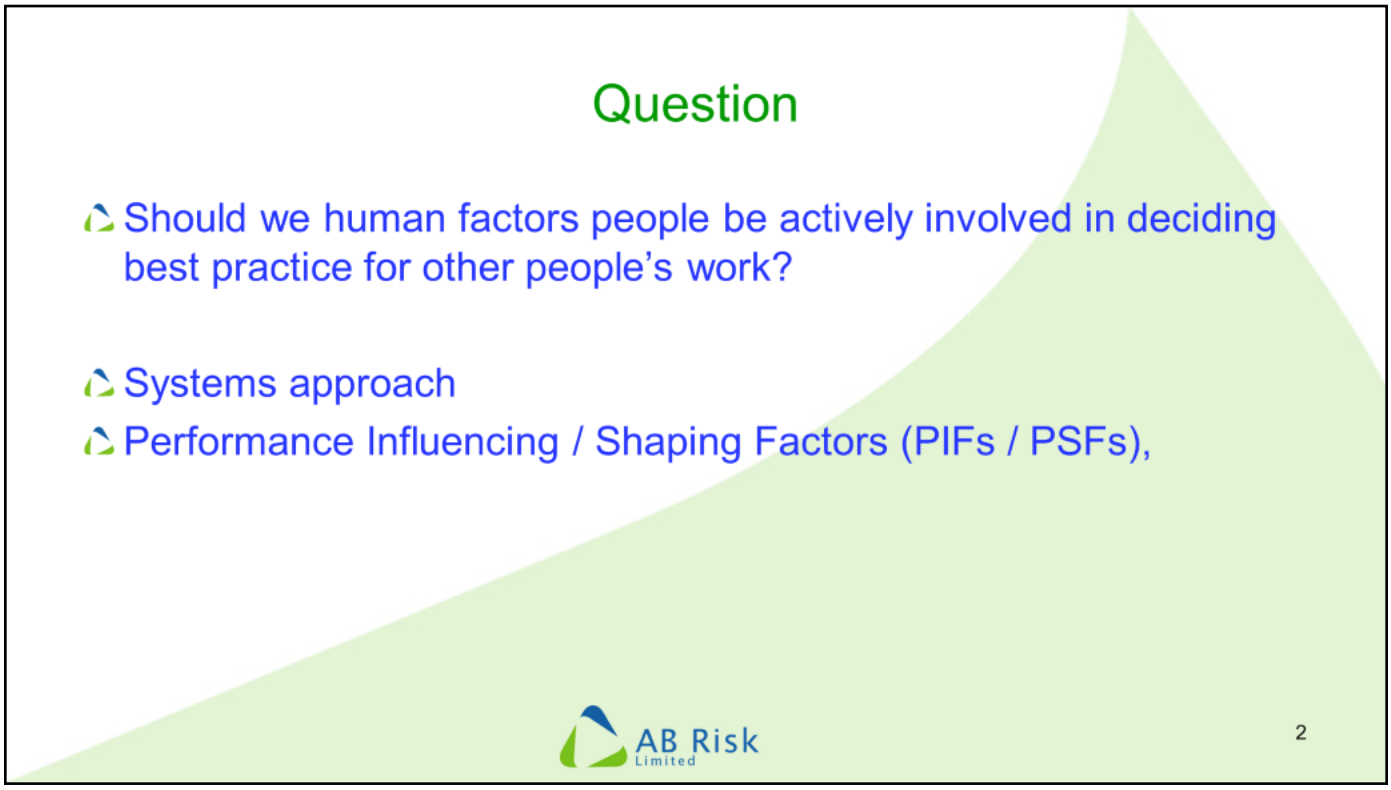

Hello. I am here today to ask a question – "should we human factors people be actively involved in deciding best practice for other people's work?"

One of the features of human factors is that we take a systems approach. And we can be quick to criticise those that do not. Engineers for example who focus on equipment without acknowledging the human contribution.

But when given the opportunity to get involved we often limit out input to Performance Influencing or Shaping Factors. It is a shame we

cannot agree on which term to use but more fundamentally is that PIFs/PSFs are only a very small part of a system.

Now I have to emphasise that this is based on my own experience in the process industries. Typically oil, gas, chemical and power. But I do watch what is going on in other sectors and see similar issues elsewhere.

Buzzwords

- Oh something new
- Looks interesting
- Could be useful
- Hang on…
- No substance
- Of well never mind
- Hang on…
- It's become a distraction
- Now its getting dangerous

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One of my observations is that we have a habit of being distracted by new ideas with catchy buzz words. I like to think that I have become quite adept at filtering the good ideas from the noise, but as a community we seem to spend far too much time looking for value in ideas without real substance.

This is a shame because we have some really useful tools in our toolkit.

Task analysis

- How work is done in practice
- It depends on the individual / team.

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Task analysis is one of them. It is an ideal tool for looking into how the way work is done in practice may be different to how we assume.

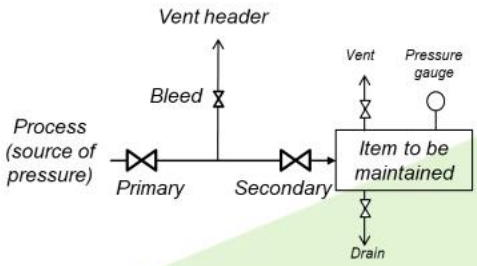
When I look back at my experience, we started on a major safety critical task analysis project at the Stanlow oil refinery in the mid 1990's. We were using task analysis to work out how critical tasks were being performed in practice. Rather inconveniently we frequently found significant differences between the way individuals and teams were doing the same task. For a critical task this was not considered to be acceptable and our work became focussed on getting the

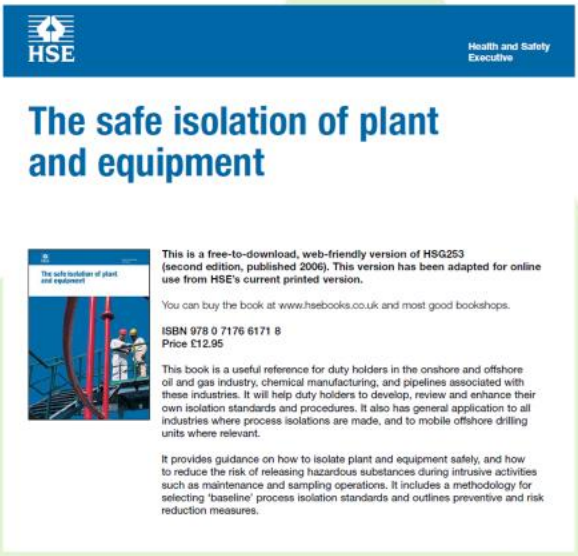
people who performed the task to agree how it should be done in the future. The human factors role was to document the agreed method with a human error analysis to demonstrate that the risks had been considered.

Safety critical task analysis has been one of my main activities since then. But when I look back now I can identify examples where I have strayed into discussing with people performing a task whether their methods are actually correct.

Process industry

- Practice not meeting guidance
- But can be done with effort




HSE

Health and Safety Executive

The safe isolation of plant and equipment

This is a free-to-download, web-friendly version of HSG253 (second edition, published 2006). This version has been adapted for online use from HSE's current printed version.

You can buy the book at www.hsebooks.co.uk and most good bookshops.

ISBN 978 0 7176 6171 8
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This book is a useful reference for duty holders in the onshore and offshore oil and gas industry, chemical manufacturing, and pipelines associated with these industries. It will help duty holders to develop, review and enhance their own isolation standards and procedures. It also has general application to all industries where process isolations are made, and to mobile offshore drilling units where relevant.

It provides guidance on how to isolate plant and equipment safely, and how to reduce the risk of releasing hazardous substances during intrusive activities such as maintenance and sampling operations. It includes a methodology for selecting 'baseline' process isolation standards and outlines preventive and risk reduction measures.

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A particular example is when part of a process plant is being prepared for maintenance. Valves are used to isolate the section to be worked on. There is a guidance document known as HSG 253.

Having done some task analyses for isolation tasks I was prompted to compare how the task was being done with the guidance. I found that there were often significant differences. This was not a case of differences between reality and how we assumed it was being done, but with how the task should be done.

Initial responses were that guidance was not relevant or not practical. However, over time it became clear that in many cases it could be followed with proper planning and preparation.

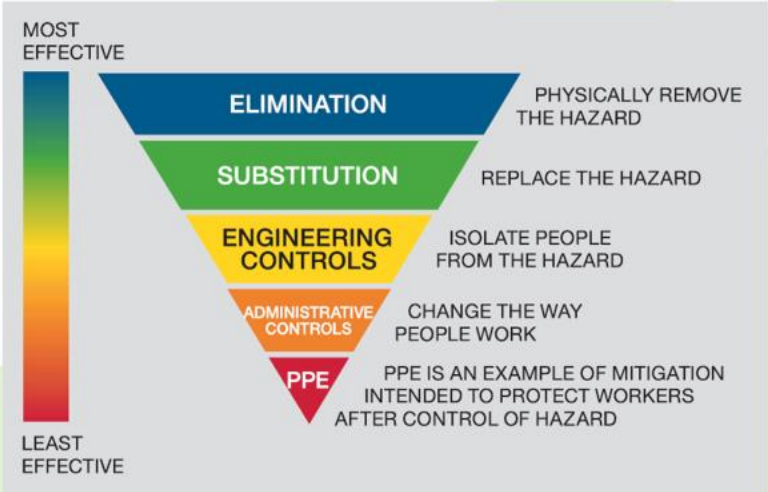
This is one example where straying beyond the usual remit of examining how tasks are performed in practice was falling short of expectations set out in relevant guidance.

So this leads me to answering my own question that we can as human factors can highlight to people that the way they perform tasks may not be correct.

What if there is no relevant recognised guidance to refer to; or if there is some but it cannot be followed for whatever reason? The issues identified with current practice when guidance is available as a benchmark must still apply.

Apply first principles

- No guidance or not following it
- Legal requirement = ALARP
- Evaluate options to reduce risk
  - Top to bottom



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This is interesting because UK health and safety law is very simple. We have to do everything that is reasonably practicable to control risks. Even if current practice is the best it can be there is a still a requirement to demonstrate that is the case. We can do that by asking ourselves what more could be done to control the risks and demonstrate that it is not necessary.

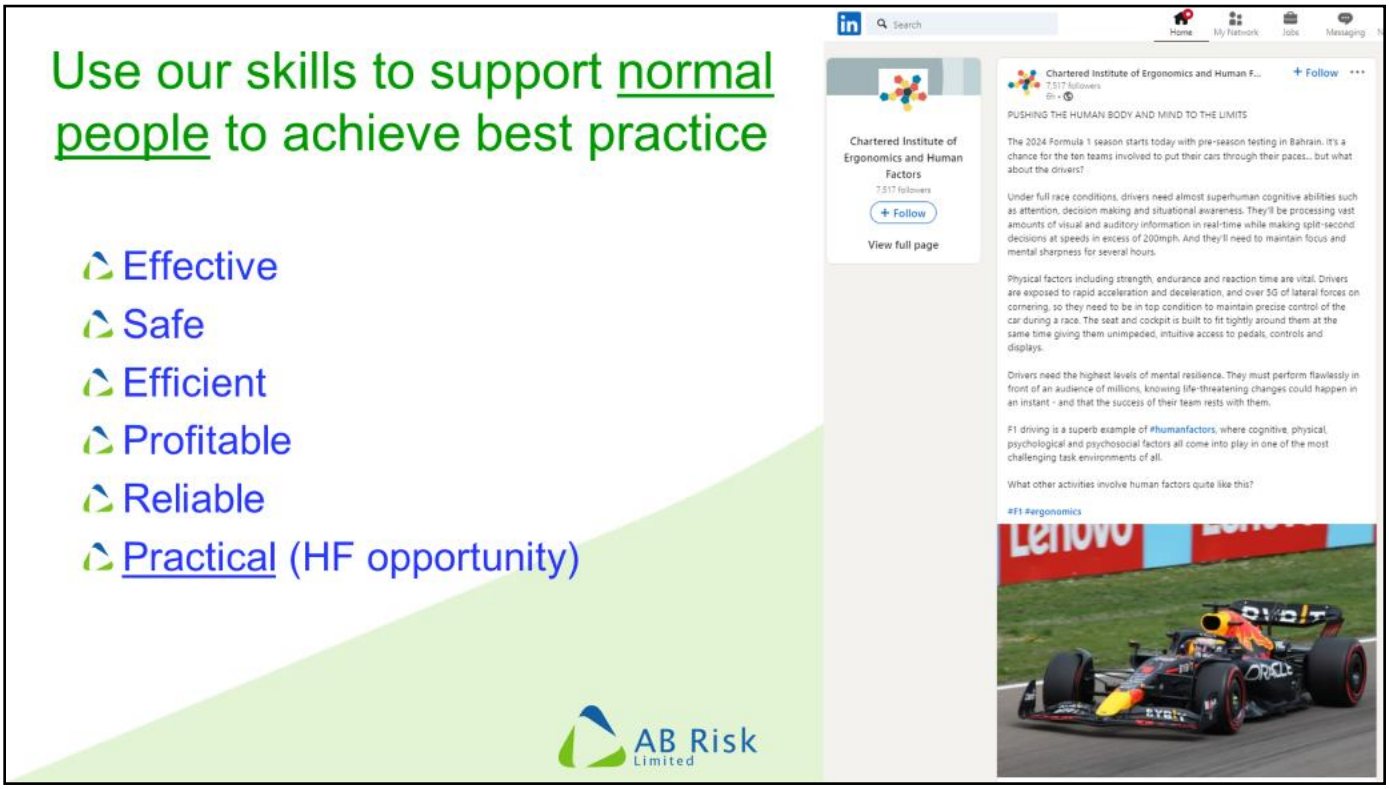
In the process industry we have a commonly accepted hierarchy of risk control. This is usually presented as a triangle to highlight that controls at the top, which are to eliminate or reduce a hazard, are more effective than things

like procedures at the bottom. It allows us to examine options and determine if we have done everything reasonably practicable to reduce the risk. I feel this is equivalent to the idea of first principles that scientists will use to fill gaps where no agreed theory or rules exist.

I recognise that this hierarchy may not apply directly to every industry but I would expect something equivalent should be available. As an aside I would emphasise that PIFs/PSFs are only part of the procedural control on the hierarchy, so a fairly small part of the lesser effective type of control.

I realise this may only be relevant to the process industries where I work but part of the problem is that the human factors guidance out there is saying that our main concern is PIFs or PSFs. We often don't get invited to projects until after the fundamental system design has been fixed. And we work in a context where other people, including engineers, who view humans simply as the weak spot in systems that need to be eliminated wherever possible.

I can't help thinking that if we could demonstrate our ability to drive human performance to achieve best practice we may get more invites to take part.



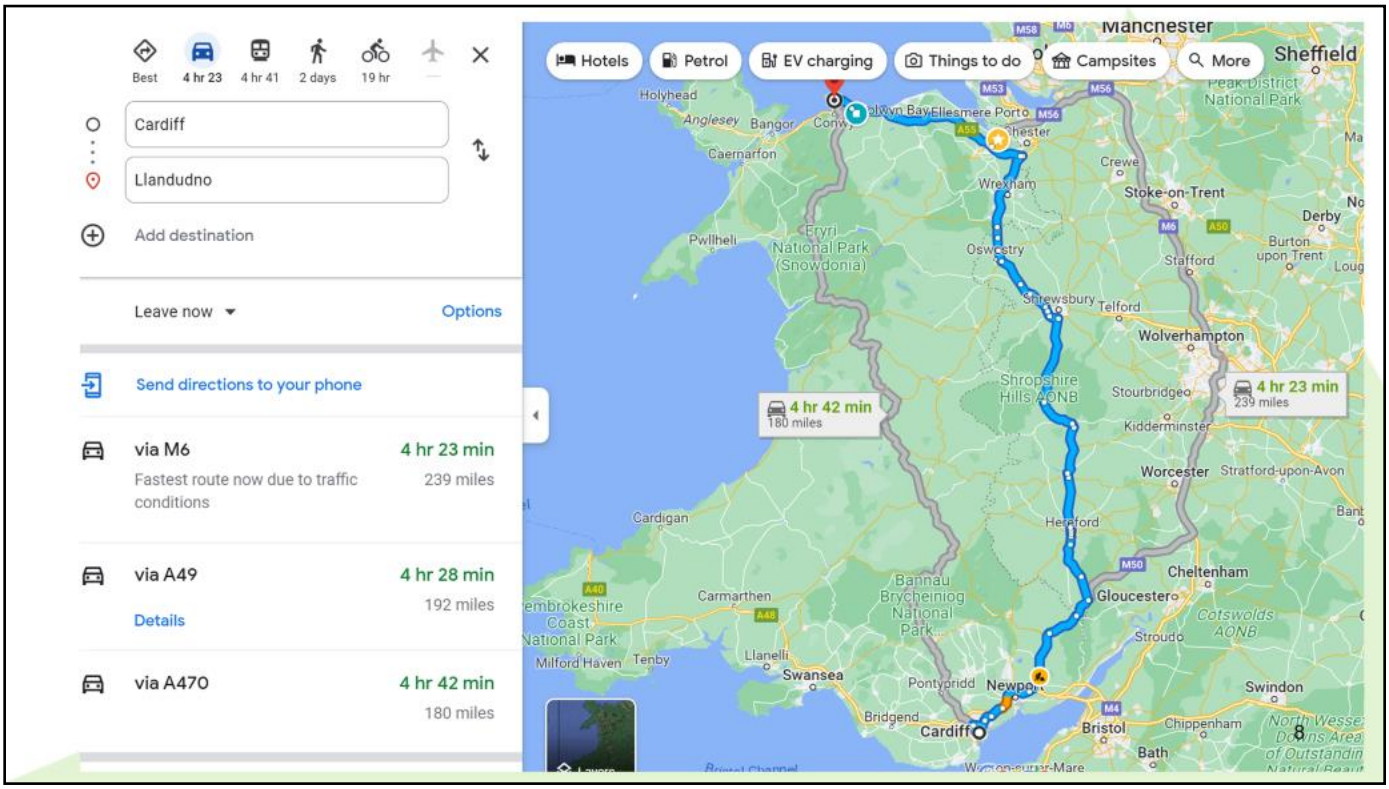
In this content best practice has to be effective, safe, efficient, profitable, reliable and practical. We do find that guidance is often viewed as impractical and so viewed as irrelevant. But if it satisfies the other requirements we must be able to use human factors to engineer systems so that the requirement for practicality is also achieve.

With this in mind we have to acknowledge that most people are at best quite good or mediocre at their job. Even the superstars only excel in a

very small number of tasks. I hope that human factors is able to show how normal people can be supported to achieve best practice. Which I believe is significantly different to managing PIFs / PSFs to support current practice.

But that brings me back to my question “should we human factors people be actively involved in deciding best practice for other people’s work?”

Let me finish with an analogy.



I live in Llandudno in North Wales. If I want to drive to Cardiff in the South I have three broad options. One is cross country following the length of the A470. It is direct but a slow road. The other is to head East first and then south through Hereford. It is a bit further but the roads are generally better but also busier. If I talk to friends there is a mix of preferences.

Interestingly some sat navs give a third option to take dual carriageway and motorway all the way. It is much further but obviously the algorithm favours the faster roads.

If you ask me our preference it is the A470, which we have used many times with success (i.e. we got to Cardiff). But the reasons why are really quite arbitrary. There is an almost romantic attraction of staying on the same road. We have encountered hold ups when we have tried the alternative route via Hereford. But possibly the most compelling is that we often drop our dog at kennels a couple of miles into the route, and it seems somehow wrong to retrace our steps for a couple of miles to take the other route.

The point is it is our current practice but our route choice is very arbitrary. And I believe that people at work follow similarly arbitrary processes when choosing a task method.

My decision is based on convenience and experience that says it works OK. But is it the safest route? Almost certainly not. Is it the cheapest? Although fewer miles, it is a lot more start-stop so probably not. I also imagine it creates more wear and tear on the car. So perhaps the sat nav route is actually best practice.

Any questions?

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And here is the killer observation – perhaps taking the train is the best option

I will finish there and am happy to answer any questions

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I hope you have found this useful and thank you for your interest. If you have any questions do not hesitate to contact me.