

Birmingham Health, Safety & Environment Association

Registered Charity No.: 255523

721 Hagley Road West
Quinton, Birmingham B32 1DJ

Email: secretary@bhsea.org.uk

Website: www.bhsea.org.uk

Fax: 0121 421 3463

Tel. No. 07071 226212 (09.30 – 12.30) only

Secretary: Andrew Chappell C.Eng., MIET., Dip.E.E., CMIOSH, MCFI

Newsletter

May 2006

Welcome to Our New Members

We wish to extend a warm welcome to the following member, who has recently joined BHSEA: -

- Adrian Watton, Director, AGW Electrical (Services) Ltd.

Monthly Meeting on Monday 8th May 2006

Chairman **Mark Hoare** welcomed the members and brought their attention to the BHSEA website and how to put it to best use. The Secretary said that apologies had been received for today's meeting from Gerry Mulholland, Tony Hall and Warwick Adams. He also drew member's attention to the Annual Workshop, which this year dealt with Materials Handling, and he added that the programme and booking form would be enclosed with this Newsletter.

Mark Hoare then apologised to the members by saying that the advertised speaker had been required to go to another meeting in London and could not be with us this afternoon. However, the Secretary was able to give a presentation on Accident Investigation, at short notice and all the audience bravely remained in their seats!

Accident Investigation – a different approach!

Andy Chappell, BHSEA Secretary

There are many techniques and methodologies in common use for carrying out Accident Investigation and the most commonly accepted starting off point is this definition of an accident: -

“An Unplanned, Unwanted event
caused by

*an unsafe act
or, an unsafe condition*

It is these twin causations that have traditionally been taken as the basis for accident analysis and focussing prevention measures in the past. But, this afternoon, I want to give members the opportunity to consider alternatives, which may enable them, not only, to develop better remedial measures but also to use a model that can be used as the basis for a proactive Health and Safety Strategy.

But first, it is important to accept the purposes for doing Accident Investigations. There are three classic reasons quoted for this and the one I always put first is: -

The Moral Duty! This is to eradicate accidents so as to eliminate unnecessary Human Suffering or Loss

This puts accident investigation into the realms of “doing the Right Thing for the Right Reasons”! Next comes another very powerful motivator: -

Financial Reasons For the employer to reduce business loss, compensation payments and/or fines AND for the employee to pursue recompense in the civil courts.

Finally, we have

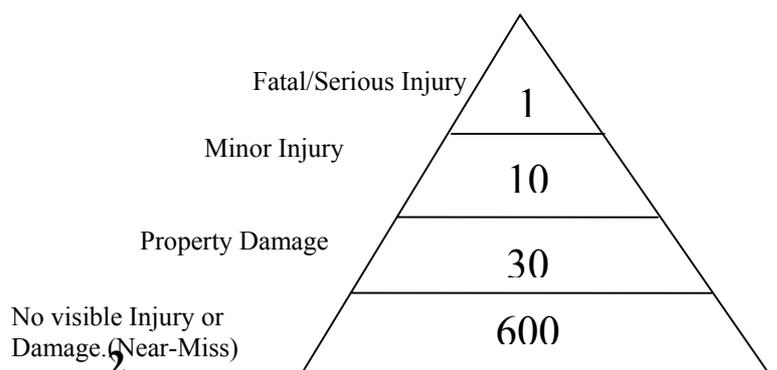
The Legal Duty The employer is required to provide detailed reports for RIDDOR to the Enforcement Authority and, hence, an ‘implicit need’ for some investigation.

Although there is HSE guidance on accident investigation, there is no specific legal requirement to do it. HSE have commissioned this report: -

http://www.hse.gov.uk/research/crr_pdf/2001/crr01344.pdf

Some years ago the HSE published findings about the hidden costs of accidents being like the underwater mass of an iceberg. This showed that the hidden costs varied from between 8- to 36-times the direct costs, thereby reinforcing the financial incentive for managers to investigate accidents effectively!

Another form of ‘encouragement’ to investigate all types of accidents is this well-known result of research showing the ratio of numbers of accidents, relative to their seriousness, in the shape of a triangle. This indicated that firms

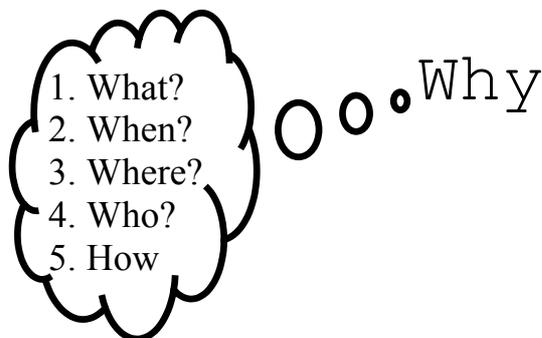


might experience many examples of ‘Near-Misses’ for every injury accident, thereby implying that there were many opportunities to ‘cure’ problems and prevent accidents before they happened. Although the figures vary in different research projects, the overall rationale has been popular over the years.

There are no surprises, either, on the general style of an investigation, which is: -

1. Respond quickly to the first report of an emergency to collect physical evidence and witness statements, whilst it is still fresh.
2. Collect all the relevant information, by any means; tape recorded, video and still photography.
3. Analyse all the significant causes – that will be the focal point of this afternoon’s presentation!
4. Develop and take remedial actions
5. Review the findings and recommendations (AND relevant Risk Assessments)
6. Follow through on the effectiveness of the actions.

A well-known discipline for ensuring the rigour of any accident investigation is the five stage **Critical Examination Technique**. By means of a thorough examination of the



question in each stage, before moving on to the next, all the pertinent facts are brought out into the open before the investigating team is sidetracked by other issues. There is also less opportunity for witnesses to become confused by rambling questions. This careful stage-by-stage examination, however, also helps to ensure that nothing is forgotten.

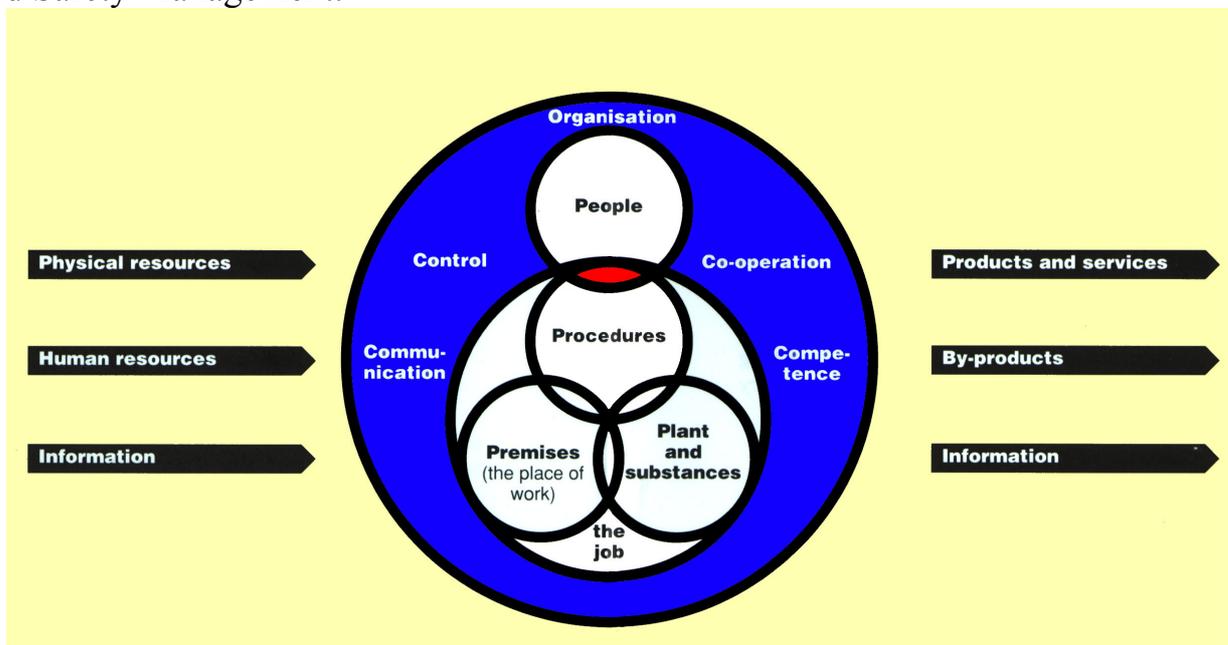
But the really powerful aspect of this technique, however, is to ask the supplementary question *Why?* about all the other questions. This what turns a basic, mundane “Accident Report” into an “Accident Investigation”, whereby facts cannot be hidden and previous assumptions are challenged vigorously by this style of “Lateral Thinking”! The table below illustrates the analytical process which adds to the foundation laid down by the Critical Examination, by addressing the discrete stages in this Loss Causation Model, devised by Frank Bird: -

1.Loss	Personal Injury	Property Damage	Production Loss
2.Accident	Slips/Trips/Falls	Crushing	Vehicle
3.Immediate Causes	Sub-standard Practices		Sub-standard Conditions
4.Basic Causes	Personal Factors		Job Factors
5.Loss of Control	Failure to maintain compliance with adequate standards for all work activities.		

This table traces the history of an Accident in discrete stages back from the **Loss**, defined as **Personal Injury OR Property Damage OR Production Loss**, through to the stage 5, where things started to go wrong. The Loss is caused by some type of Accident (Stage 2), which gives the investigation added focus, but it is at stages 3 and 4 where this technique starts to have a marked effect on the quality of the results. Stage 3 is

concerned with events and conditions immediately leading up to and directly linked to the cause of the accident. It is important to note that even these Immediate Causes may identify Management, as well as operator, failings. Moving back from the immediacy of the accident, Stage 4 directs us to look at the distinct areas of the **Personal Factors AND Job Factors** that may have had some influence in the accident. Although it may be tempting to assume that Personal Factors are under the sole control of the Operator, this could be a serious misconception, as lack of training and poor day-to-day supervision are also examples of management failings. Conversely, even the Job Factors are not always perfectly controlled by the management process, as they could be undermined by operator failures. Separate consideration of Immediate and Basic Causes in this way adds an increased rigour into the investigation.

Stages 3 and 4 also call for a sound knowledge of the way work activities *should operate*, as well as the way in which they *actually operate* and this calls for careful selection of the investigative team. Many key issues to be addressed are illustrated in this diagram that appeared in the first edition of the HSE's HSG(65), Successful Health and Safety Management.



At its root is the Job Activity that relies on procedures and work instructions to give it effect. Naturally it takes place in some type of premises and uses substances/materials and plant/equipment in order to reach completion. Nothing will happen, of course, without People to complete the task and it is their interface with all the other main job factors that can give rise to accidents. In addition to these job factors, there are four others which have been used by the HSE to define “**Safety Culture**” and are held up to be an ‘ideal’, for which to aim. They are the “**4 C’s**”:-

- Control
- Communication
- Co-operation
- Competence

The “4 Cs” are really the ‘lubrication’ that keeps the machine operating on a day-to-day basis and give the company its ‘ethos’. Altogether, these Job Factors encapsulate the way Health and Safety is managed throughout the “**Organisation**” and will have a some effect on the accidents that occur. Because companies do not operate in isolation, safety performance will also be related, in some part, to external factors, like physical resources, human resources and information that are imported to support its work. Equally, its output, in terms of Products and Services, Information and by-products will impact on the public and/or environment and may also need to be addressed in the investigation. Examination of all these factors ensures that nothing is ignored and, *by implication*, are important management elements to be included in an effective Safety Management Strategy. A ‘Mirror Image’ in fact.

In summary: -

Critical Examination – sets the style of questioning

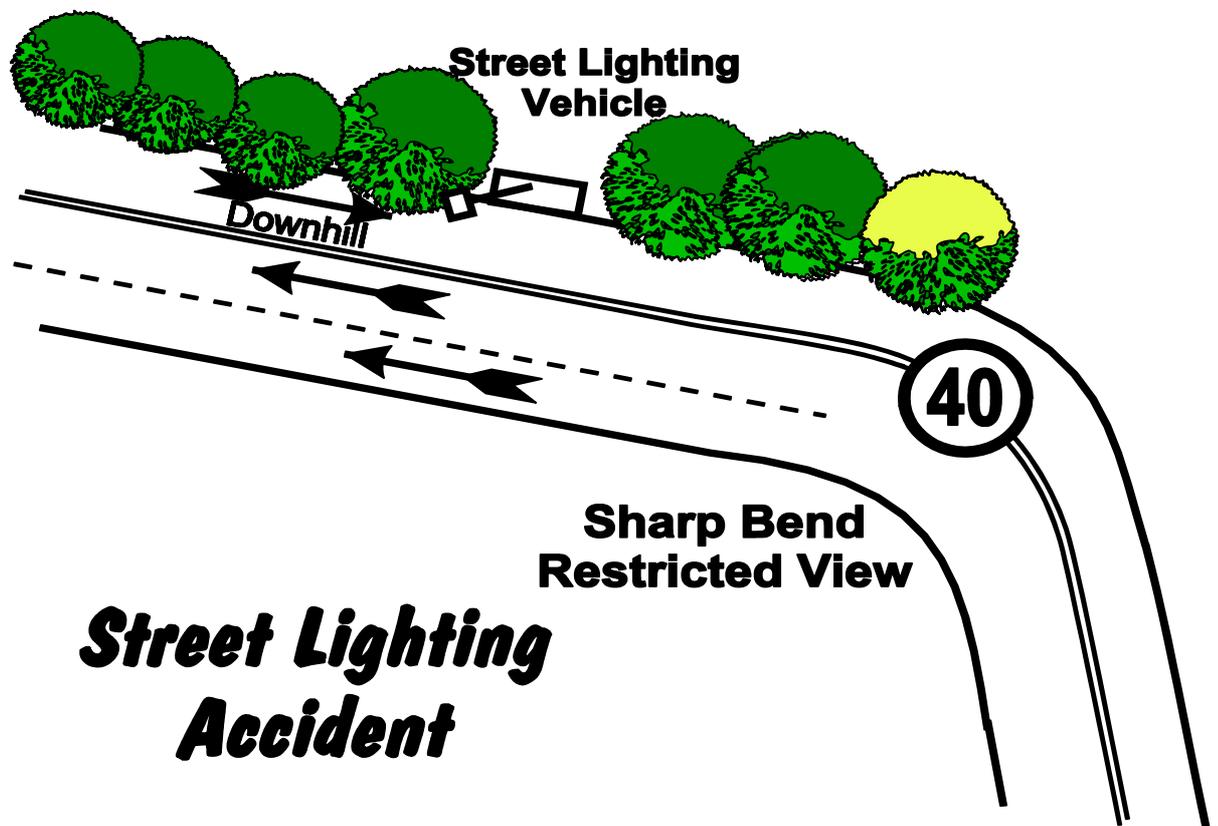
Loss Causation Model – defines the frame of analysis

And

HSG 65 – gives the scope of issues to be addressed, in order to take in the whole picture.

Members' Questions

“Members’ questions” was slightly different this month, as “I was asking the Questions”! These took the form of an accident case study, illustrated by this sketch:



The Person

Alan Tern was a repair electrician who had been recruited by a reputable firm of street lighting contractors a few months before this accident. He had a good reputation with his old employers and the major client, a Local Authority street lighting department. His new employer was careful to check, at the time of his interview, that he had received appropriate technical and safety related training.

Extent of the work

The electrician had been given a day's work to carry out maintenance and fault repairs to street lighting columns in various parts of the city and rural sectors of the local authority. He was using a **Mobile Elevating Work Platform (MEWP)** which was mounted on the top of a 3.5 tonne panel van. The vehicle was painted in the regulation bright yellow paint, with operational flashing beacons, and the equipment included amounts of road signs for compliance with the Department for Transport, Traffic Signs Manual, Chapter 8 safety signing.

The Accident

At the accident site, with the best of intentions, the repair electrician had positioned his Mobile Elevating Work Platform (MEWP) vehicle on the verge of this three-lane 40 mph road, so as to cause least nuisance to passing traffic. Because of its position off the carriageway, he thought that it was unnecessary to place cones in the road. The nearside lane had continuous, double lines on the other side and high-sided vehicles had cut a path through the foliage on the trees. This showed how close they normally came to the lantern heads where he intended to work.

A double-decker bus, travelling downhill in this lane, collided with the MEWP bucket that had, unknowingly, been manoeuvred into the path of the traffic, where it was concealed in the foliage.

The repair electrician, who was not wearing a safety helmet, or safety harness, was **thrown out of the bucket**, rolled along the roof of the bus, fell to the ground **AND walked away from it!** The bus driver was prosecuted by the police for driving without **Due Care**, and the Street Lighting Contracting Company was prosecuted in a magistrates court under the Health and Safety at Work Act.

Question 1 - What are the Immediate Causes of the Accident?

Members quickly identified that it happened because the bucket was positioned in the traffic lane and had not been coned off! The fact that the electrician had not been wearing a harness or safety hat, did not cause the accident but did increase the probability of serious multiple injuries following the fall from the bucket! By parking on the verge, in an effort to be safer and cause less inconvenience to road users, the electrician had actually increased the risk because the bulk of the vehicle was not clearly visible, nor were the flashing beacons.

In deciding what should have been done, questions were immediately posed about his training and it became obvious that his training syllabus did *not* contain instruction on coning off the “working envelope” of the vehicle and its hoist. The significance of this need should have been obvious to the man because the tree foliage had been substantially carved away by the passage of high-sided vehicles in the vicinity of the lantern heads.

Question 2 – What are the Basic Causes of the Accident?

As to the question of what else should have been done, it is self-evident that the vehicle should have been in the roadway and coned off. However, that would have created an immediate effect of diverting the downhill traffic flow into the fast moving uphill stream, across continuous double white lines! That forces us to conclude that the job should have been set up in a totally different way, by laying out a contra-flow system, one lane ‘up’ and one ‘down’, extending round the sharp bend at the bottom of the hill. This was beyond the capacity of the cones and signs on the vehicle and needed a more informed approach from the supervisor, as a result of a special risk assessment. This, in turn, calls for an enlightened approach from the management chain to encourage alterations to the ‘generic’ plan, where necessary. The man should have also been trained on the specific technique which would have prevented the accident and this should have triggered off the necessary changes in the arrangements by others!

There are many other aspects to be addressed, but not in this time scale! It was apparent, however, from this short exercise that many problems existed at different levels in the organisation and it was definitely *not* a case for ‘blaming’ the person nearest to the point of the accident! More so, it was a case of management failures being the cause, which is why the company pleaded guilty in the Magistrates Court to a charge under Section 2 of the HASAWA 1974. It is my experience that the rigorous application of this technique is more likely to reveal management failings, a fact that is not lost on the HSE.

On the question of justifying the case for accident investigation, a member stated that an Insurance company had stated that sometimes it was an advantage in court not to have investigated an accident, so that you can say “I don’t know the answer” if asked about causes. This provocative statement stirred up the predictable hornet’s nest and the consensus was that it was on balance a benefit to find out the facts and that the member who asked the question should change his Insurance company!

I rounded off the presentation by recalling an investigation of a serious motorway accident, where senior management wanted to fire a streetlighting electrician for interfering with an interlock on a hoist vehicle. Following a painstaking investigation I was able to show that there were multiple faults on the vehicle safety systems and that the man had acted in desperation because his complaints had not been answered. After many procedural improvements the man kept his job – a small victory for the safety profession and the workers!

Seminar on "Fine Particle Measurement"

In anticipation of hearing Brian Fullam on NanoTechnology, Mark Crooks, Sales Manager TSI Instruments, attended the meeting to invite BHSEA Members to this seminar on 23rd May 2006 in Stoke-on-Trent. Anyone interested in this topic should visit the TSI website on

<http://secure.tsi.comregforms/particles/seminars/FineParticleMeasurement/uk/regform.aspx>

Date of the next Meeting

**08.30 am on Thursday 22nd June 2006
at the National Motor Cycle Museum
Materials Handling Workshop
*In Partnership with HSE Laboratory Buxton***

In advance of the HSE's "Backs 2006 Campaign" we are providing this comprehensive look at the HSE's Materials Handling Assessment Chart (MAC Tool), devised by the Ergonomics Specialists and the Health and Safety Laboratory in Buxton.

The MAC Tool is an invaluable aid to setting up an effective Materials Handling strategy and will be supported by complimentary sessions on the Occupational Health implications, together with displays and demonstrations of mechanical handling equipment.

As usual, at our BHSEA Workshops, this unique learning opportunity will be reinforced by practical experience through the medium of relevant case studies and a delegate pack based on CD-ROM and HSE Literature

**Book Now to avoid
disappointment**