

Health and Safety Bulletin

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Useful contacts:

HSE website
www.hse.gov.uk

HSE Books:
PO Box 1999
Sudbury
Suffolk
CO10 2WA
Tel: 01787 881165

Environment Agency
website:
www.environment-
agency.gov.uk

Using “bowtie” in accident investigation

Our last Bulletin focused on the use of fault tree analysis for accident investigation

- starting with the accident consequence, asking what lead directly to the outcome to identify immediate causes
- examining each immediate cause for the unsafe acts and unsafe conditions that led to the immediate causes to focus on the underlying causes
- finally evaluating the underlying causes to clarify which management systems failed – the root causes of the accident

High hazard industries have developed this methodology further into “bowtie” analysis. This practice can be used to identify potential consequences as well as causes of accidents and incidents and display all the pertinent information on a diagram.

A history of the Bowtie

Originally it was used in proactive risk management, as a tool to demonstrate that the level of control was adequate to manage risk to a level “as low as reasonably practicable” – in safety cases for example. It was not long before organisations recognised that bowties could also be used to help identify the causes of accidents and also communicate this information.

How does the Bowtie work?

It is important that Bowtie analysis is carried out systematically, but in order for the outcome to be accurate, it often involves a team who also need to think creatively. To balance these two needs, it is quite common for the process to be facilitated. This simplified diagram demonstrates how the causes, consequences and current controls can be plotted.

Once the evidence has been gathered, the causes and consequences can be mapped onto the diagram, clearly demonstrating which prevention and mitigation controls failed, allowing the event to occur.



The Netherlands have embraced this method of accident investigation wholeheartedly and created a software programme called “Storybuilder” (free to download at <http://www.rivm.nl/en/Topics/S/Storybuilder>). It enables the data from any incident to be loaded into a database and analysed to produce the accident pathway – in Storybuilder this not only identifies controls that have failed but also potential breaches of legislation.

Summary

If an individual suffers an accident at work (whether the effects are short or long term), or there is an incident which everyone recognises could have caused serious injury, the minimum required of an employer is to investigate in an attempt to prevent a similar reoccurrence. There are many reliable methods available to help ensure the investigation is effective and identifies practical action that can be taken to strengthen prevention and mitigation controls and improve health and safety standards.

Recently issued health and safety information:

- INDG233: Preventing contact dermatitis and urticaria at work <http://www.hse.gov.uk/pubns/indg233.pdf>
- Waste 10: Petrol recovery from end-of-life vehicles <http://www.hse.gov.uk/pubns/waste10.pdf>
- IOSH's No Time to Lose website <http://www.notimetolose.org.uk/>
- Free articles about electrical safety <http://www.electricalsafetyfirst.org.uk/>
- Free safety culture talks from Tim Marsh <http://www.shponline.co.uk/4-steps-to-a-better-safety-culture-safety-talks-with-tim-marsh/>
- Free checklist for assessing the risk associated with powered gates <http://www.gate-automation.com/images/pdfs/safety-review-sheet.pdf>

IOSH's No Time to Lose campaign

IOSH has recently launched this campaign to get carcinogenic exposure issues more widely understood and help businesses take action. Although the campaign covers all types of occupational cancer, more recently it has been publicising facts and figures associated with solar radiation – for example, IOSH estimates that approximately 60 UK workers die each year as a result of exposure and 1,700 new cases of skin cancer are registered annually.

IOSH has developed some free resources (relevant words hyperlinked) to help employers improve their management of this risk, including:-

- a [video](#) about IOSH research on solar radiation exposure at work, including tips on how to manage it
- a [checklist](#) to help you assess the risk of UV exposure in your business
- a good practice [case study](#) on how the Royal Mail Group delivered its sun safety strategy

Case Law update

This issue focuses on cases associated with exposure to substances categorized as potential and recognized human carcinogens

A Cambridge instrument company and a health and safety consultant were fined for risking the health of employees, after one was exposed to chemicals including trichloroethylene (a powerful de-greaser and probably a carcinogen) and paints containing isocyanates while preparing and painting scientific instruments. The company failed to provide adequate exposure control or health surveillance and the health and safety consultant they employed did not provide suitable information or advice. The employer was fined **£9,000** and ordered to pay full costs of

£2,852 after pleading guilty and the consultant was fined **£1,500** with costs of **£1,000** - he also pleading guilty

A bath restoration company has been fined **£25,000** and ordered to pay **£56,286** in costs for safety failings after a worker died from inhaling toxic fumes in the bathroom of a flat. The stripping agent contained dichloromethane (also known as methylene chloride) a carcinogenic toxic chemical. Fumes rapidly built up in the confined space and he died at the scene as a result of over exposure.

An electrician who was diagnosed with the fatal asbestos-related cancer mesothelioma received **£140,000** in compensation from his former employers. He was exposed to asbestos while working as an electrician's mate and then a store man carrying out electrical maintenance for a van manufacturer.

Public courses

Clwyd Associates have a series of public courses running over the next 6 months in Coalville:-

IOSH Working Safely – 9th November 2015 - £140

IOSH Managing Safely – 22nd 24th February - £525

NEBOSH certificate - £1399
NGC1 - 11th-15th January 2016
NGC2 - 1st-5th February 2016
Exams – 2nd March 2016

All prices are exclusive of VAT and include exam registration fees, study support handouts and light refreshments.

Please contact us for more information or to book a place.

Clwyd Associates Ltd
www.clwydassociates.co.uk



Health and safety and the self employed

With the introduction of the Health and Safety at Work etc. Act 1974 (General Duties of Self-Employed Persons) (Prescribed Undertakings) Regulations 2015 on 1st October 2015, self-employed persons whose work activity poses no potential risk to the health and safety of other workers or members of the public, will no longer need to comply with health and safety legislation.

The HSE estimates that this new law will no longer apply to 1.7 million self-employed people like novelists, journalists, graphic designers, accountants, confectioners, financial advisors and online traders.

Schedule 2 of the Regulations lists a number of occupations which are identified as high risk (such as agriculture, construction and railway work). For this work health and safety law will apply even if the individual is self-employed.

The legislation is available at <http://www.legislation.gov.uk/ukdsi/2015/9780111136980>.



Orton House
Overton Close
Leicestershire
LE67 8FY

PHONE/FAX:
01530 837477

E-MAIL:
enquiries@clwydassociates.co.uk