

‘ Construction Occupational Health and Hygiene - Pre-mortems are best’



Serving a noble profession

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10 October 2016

Why should Health Risk Assessments be a priority in the Construction Business?



- The most obvious risks associated with construction are traditionally “Safety” related:
 - Falls from height
 - Electrical
 - Serious injury from tools and machinery
 - etc.
- Instant identification of cause, news worthy, shock value!
- Health effects caused by work related exposures missed due to slow development and long latency periods before symptoms arise
- Transient or Sub-contracted workforce - difficult to identify many illnesses in early stages, to track development of serious illness, or to control and reduce exposures until too late.

Construction Hazards to Health:



Cancer and construction - causative agents

- HSE (UK) commissioned detailed research on cancer caused by work environments - this identified 'significant risks' in the construction industry
- the construction industry has the largest burden of occupational cancers amongst the industrial sectors. Over 40% of the occupational cancer deaths and cancer registrations were from the industry
- many more construction workers were killed by occupational cancer compared to accidents. It is estimated that for every fatal accident in 2012-13, approximately 100 construction workers died from a work-related cancer

Construction Hazards to Health:



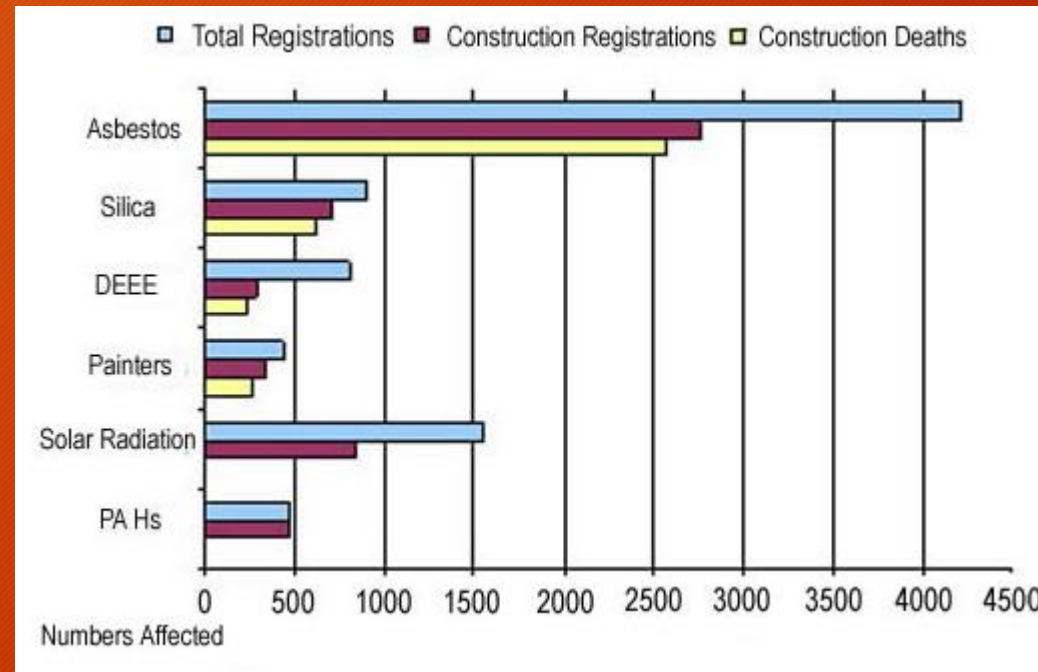
Cancer and construction - causative agents

- most cancers in construction were lung cancers caused by exposure to Asbestos and Silica (Quartz)
- a significant number of lung (and other) cancers are also linked to Diesel Engine Exhaust Emissions (DEEE) and work as a painter
- solar radiation and Polycyclic Aromatic Hydrocarbons (PAHs) from coal tars and pitches were responsible for an additional 1,300 cancer registrations in the construction industry, these were linked to non-melanoma Skin Cancers
- a much smaller number of registrations and deaths were linked to a number of other substances including lead and wood dust

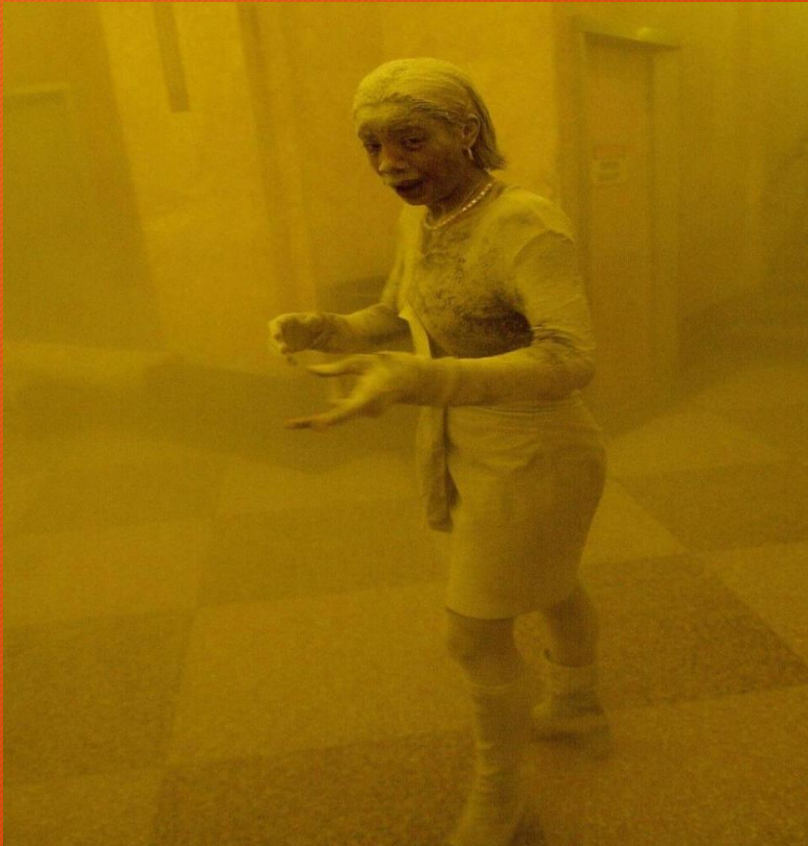
Cancer and construction - causative agents



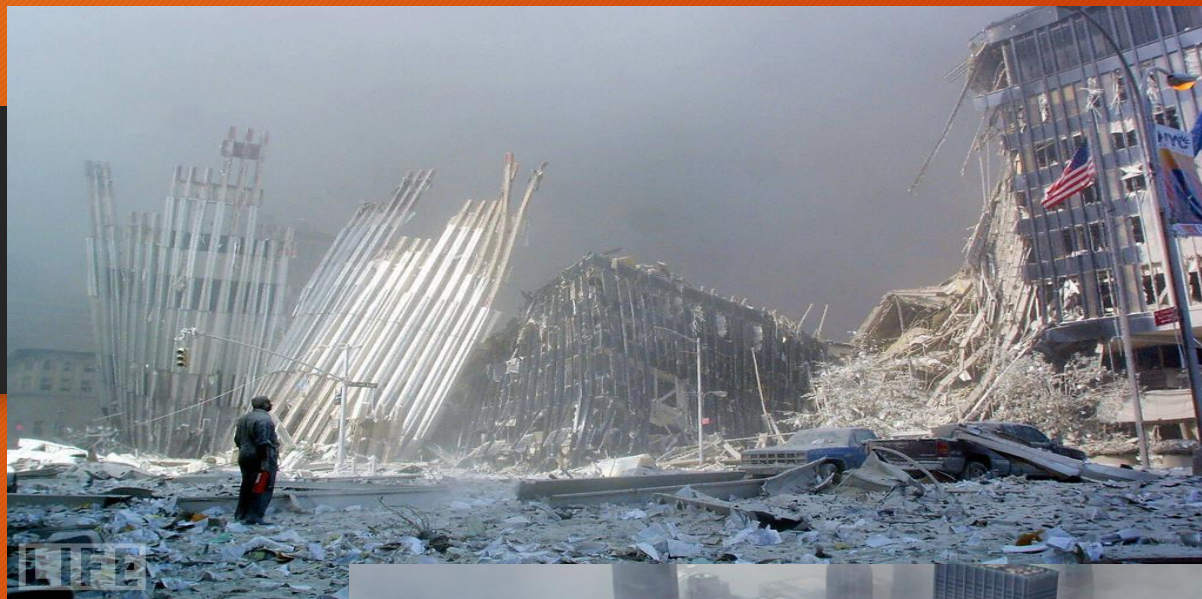
Construction industry cancer registrations / deaths in (2004/5) compared to all occupational cancer registrations (UK -2004)



World Trade Centre collapse - 9/11



- The dust cloud that blanketed Manhattan on the collapse of the building contained high levels of asbestos fibres as well as many more highly toxic chemicals.
- Estimated 2,000 tons of pulverized asbestos floated in the air for weeks
- 9/11 'Dust lady' died from Cancer Last year aged 42!
- What about the many first responders and construction workers?
- Some research has identified up to 70% increase in serious illness in first responders!



Construction Hazards to Health:



Other Hazardous Chemical substances - causative agents

- Construction dust - mixture of harmful agents such as the carcinogens mentioned as well as less toxic particulates (may still cause COPD)
- Cement - Lung disease, cancer and allergic contact dermatitis
- Lead, cadmium and other heavy toxic metals (old paints) - anaemia or kidney disease and published research has linked exposure to a small number of occupational cancers.

Construction Hazards to Health:



Other Hazardous Chemical Substances - causative agents

- Solvents - health effects from repeated exposure to particular solvents may include dermatitis and liver, kidney or neurological diseases. High concentrations of solvents can cause unconsciousness and death.
- Diisocyanates - Occupational Asthma and Dermatitis
- Harmful micro organisms and biological agents - vector borne disease, poor sanitation and personal hygiene may lead to serious bacterial or virus related illnesses.
- Carbon monoxide - Chemical asphyxia

Construction Hazards to Health:



Physical and other stressors - causative agents

- Noise - Noise induced hearing loss
- Vibration (WBV & HAV's) - serious injury to hands, arms and spine. Digestive system problems
- Manual handling and ergonomics - muscular skeletal injury
- UV radiation - sunburn, skin cancer
- Psychological stress - shift work, long working hours, transient nature of work

Your next job?



Risk Assessment Legal Framework



- OHSA - General Duties of Employers - Section 8(1)
- Risk Assessment: Construction Regulations - Regulation 9 (identify all hazards and assess all risks using a *documented method*), Regulation 5.1.(a) Client must prepare a basic Risk assessment
- Asbestos Regulations (Reg 14 - Asbestos that forms part of structure of workplace, building, plant or premises)
- HCS Regulations
- Lead Regulations

- Noise Induced Hearing Loss Regulations
- Environmental Regulations for Workplaces
- HBA Regulations
- Facilities Regulations
- Bylaws? (OHSA, Section 44, incorporated standards)

Regulations “under construction”:

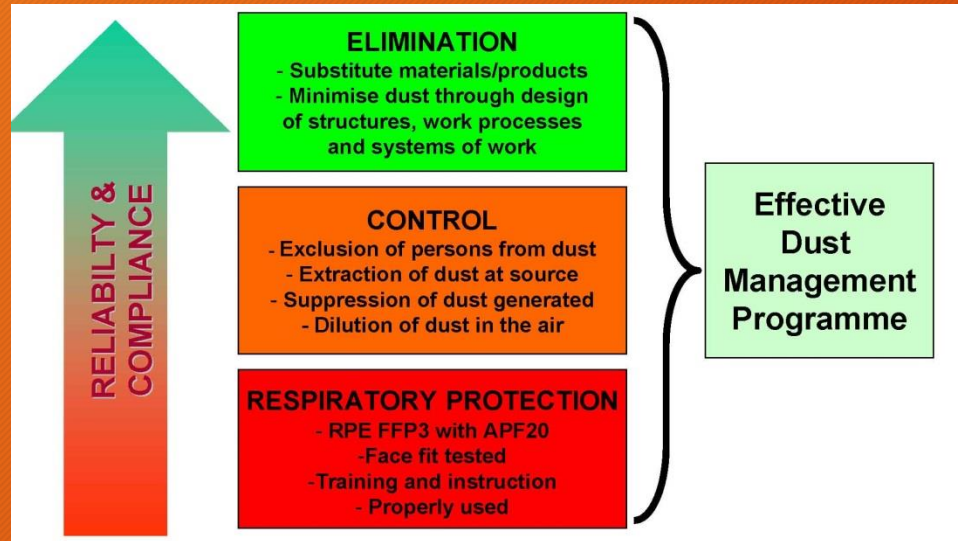
- Asbestos
- Ergonomics
- HCS

Pre-mortem / Health Risk Assessment



- Risk Assessment: Construction Regulations - Regulation 9 (identify all hazards and assess all risks using a *documented method*)
- Before construction phase commences
- Undertaken by a *Competent* person
- Must be Detailed
- Who, What, When, Where, How, Why?
- Risk Ranking based on Likelihood and Consequences

“Competent Person”



The Construction Regulations define a competent person as a person who:

- has the required knowledge, training, experience and qualifications
- is familiar with the Act and with the applicable regulations made under the Act

SAIOH Registered Occupational Hygienists (RoH, SAIOH) satisfy the requirements for competency to perform Occupational Health Risk assessments.

Competence - extended

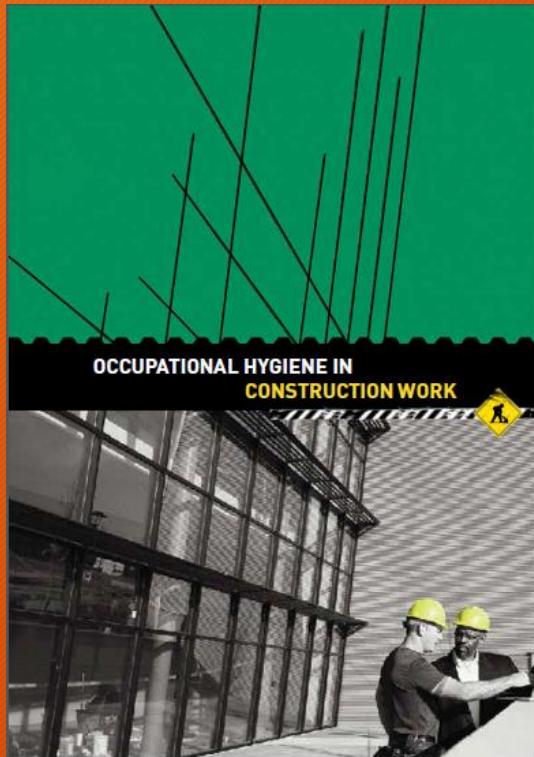


The Occupational Hygienist shares the “competence” mantle with various other role-players and as such, may work closely with the following people:

Agent (Client), Architect, Design Engineer, Safety Manager (Principal Contractor), SHE Officer, Safety Coordinator (sub-contractors), Project Manager, DoL Inspectorate, ECO, Medical Practitioners & SHE Reps



Managing Health risk in the Construction Industry



- Information guides (SA DoL, UK HSE, OSHA -USA)
- Approved Inspection Authorities (AIA's) in SA provide expert services
 - Health Risk Assessment
 - Evaluation and measurement of Chemical and physical stressors
 - Control recommendations for reduction of exposure risks

Managing Health risk in the Construction Industry



Managing health risks is no different to managing safety risks.

Assess

- You cannot properly control construction health risks without first having clear plans:
 - **Plan** - your overall strategy
 - **Identify** - the health hazards linked to your work
 - **Assess** - the significance of these hazards (who is exposed, level of exposure (measurements), duration of exposure, control measures in place, effectiveness of control)
 - **Conclude** - the degree of risk for each hazard and prioritise elimination and control of high risk exposures
 - **Involve** - workers in managing health risks

Risk Assessment models and tools



		Very likely Could happen anytime	Likely Could happen sometime	Unlikely Could happen but very rarely	Very Unlikely Could happen but probably never will
C O N S E Q U E N C E S	Kill or cause permanent disability or ill health	1	1	2	3
	Long term illness or serious injury	1	2	3	4
	Medical attention and several days off work	2	3	4	5
	First aid needed	3	4	5	6
		L I K E L I H O O D			

Managing Health risk in the Construction Industry



Control

Clear plans are no good if you do not act on them:

- Prevent - risks before work starts
- Control - any remaining risk
- Train - workers
- Medical Surveillance programmes - Preventative medicine

Managing Health risk in the Construction Industry



- **Review**

You may already have the right controls in place but are they all working?

- **Supervise** - workers
- **Maintain** - controls
- **Monitor** - controls to ensure they are effective
- **Act** - to put any problems right

Managing Health risk in the Construction Industry



A super success story - it can be done in construction!

- The London Olympics construction project - Lawrence Waterman OBE
- Large complex, contaminated site.
- Over 200 buildings demolished during land preparation
- Multiple new builds - stadiums, transport systems
- Predicted health and safety performance expectations:
 - 3 deaths
 - 75 life changing incidents

Managing Health Risk in the Construction Industry



- Actual safety performance:
 - 0 deaths
 - 1-2 life changing injuries
 - 31 periods of 1 million man hours without a reportable accident
- How - new initiatives included:
 - Plan the work for health - from risk assessment to monitoring
 - Develop worker and supervisor understanding
 - Include a 'Health Team' to supplement normal safety team

Lawrence Waterman OBE - final words of wisdom!



if you always do what you have always done:

- Health seen as **difficult**
 - **Latency** - causes less obvious so less urgent
 - *Interventions* not easy - outcomes not always obvious
-
- In construction for many years we have whispered HEALTH and Shouted **SAFETY**

Acknowledgements and references:



- SA legislation and Department of Labour Guidelines
- Health and Safety Executive website UK - Construction Guidelines and support materials
<http://www.hse.gov.uk/construction/index.htm>
- Lawrence Waterman OBE - Presentation at the Hong Kong Construction safety Council safety week 2014
http://www.cic.hk/cic_data/pdf/about_cic/news_and_update/past_event/chi/Lawrence%20WATERMAN.pdf