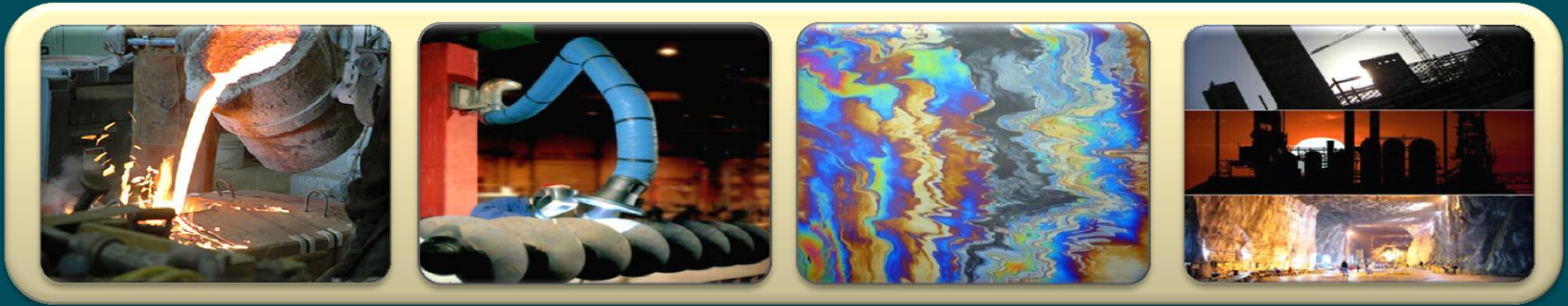


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**Occupational Hygiene Risk Assessment:**

**Not a method but a product**

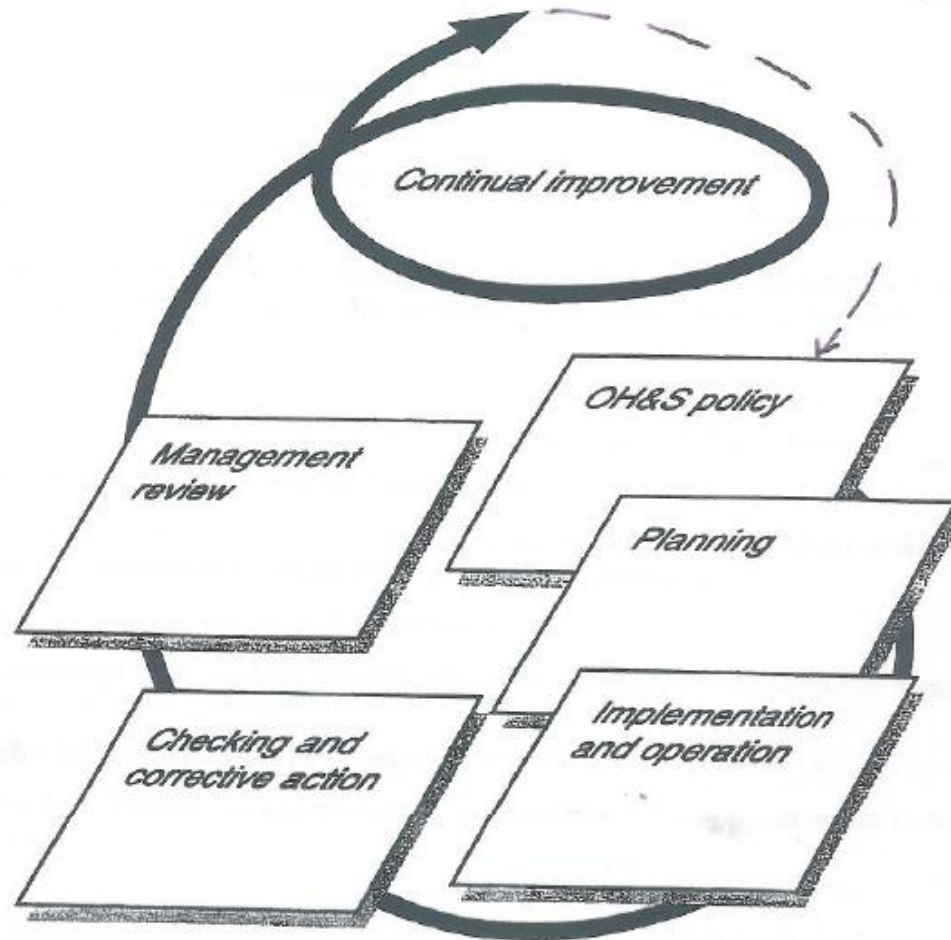
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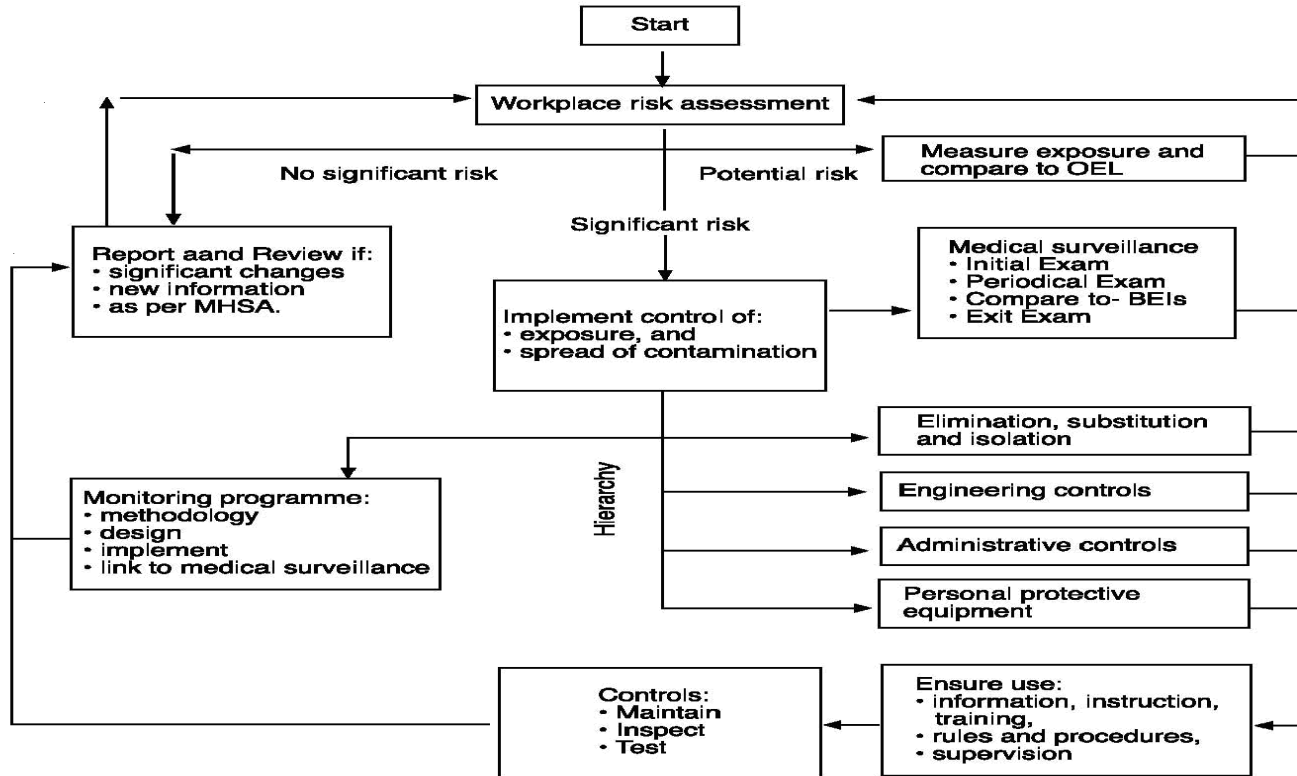
## 1. Purpose of a Risk Assessment

# OH Management Systems – OHSAS 1800



- **Risk Assessment - To know what hazards and risks you are dealing with and putting measures in place to control them:**
  - **Continuous Hazard Identification and Risk Assessments for routine and non-routine activities:**
    - **Defined methodology**
    - **Pro-active rather than reactive**
    - **Risk ranking and prioritization**
    - **Consider efficacy of current control measures**
    - **Provide for input into future controls (facilities, training, exposure monitoring, medical surveillance, etc.)**

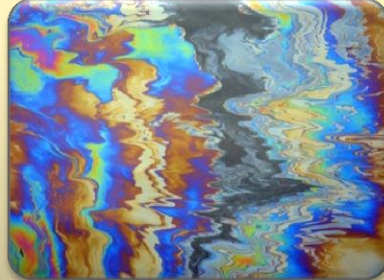




# Department of Labour OHS Act; Act 85 of 1993

- **The Act does not specify a specific OH Management System (Self Regulation), but specifies numerous, general objectives, with a Risk Assessment being a pre-requisite.**
- **This requirement for a formal Risk Assessment to be conducted is mentioned in specific in the more “recent” Regulations (Hazardous Chemical Substances, Noise Induced Hearing Loss, Lead, Asbestos and Hazardous Biological Agents).**





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## 2. Importance of Risk Assessments – in Legislation

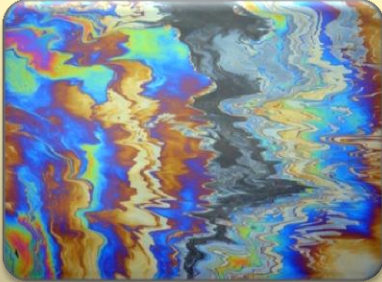
# Importance Rating - Space

- Risk Assessment receives a few paragraphs here and there
- The bulk of the Legislation (Regulations in particular) deals with monitoring and evaluation of results
- **Giving the impression that Risk Assessment is less important or less critical**

- To conduct measurements, legislation (OHS Act and MHS Act) has very strict requirements in terms of qualifications and affiliations of persons performing monitoring. Whilst measurements could be considered mere recipe based technical competencies (not quite, but almost).
- **Legislation does not require any competency to conduct Risk Assessments, giving the impression that it is “easier” than monitoring and that anyone can perform Risk Assessments**
- A situation that is taken advantage of by OHS Training Service providers – presenting 2 or 3 day courses in Risk Assessment

# Short Courses and Myths

- Service Providers each will tell you that they have the best “tool” or methodology for conducting Risk Assessments (promising 100% legal compliance, etc.) – their selling point
- When attending such a course, most time is spent on explaining the tool, and very little time on the most important part of a Risk Assessment, namely Hazard Identification
- **Because there is no method or tool for anticipation and identifying and recognising workplace Hazards**



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### 3. Risk Assessment Process – Hazard Identification

- **Terminology:**

- **Hazard**: “Source or situation with a potential for harm in terms of injury or ill health, or damage....(i.e. Inherent ability of a Source to cause harm – a constant)”
- **Exposure**: “describes the varying degree of contact to, and/or intake of a hazard, via one or more routes (a variable)”.
- **Risk**: “means the probability that injury or damage, or ill health effect will occur (i.e. the combination of the likelihood (exposure level) and consequence (harm/hazard) of a specific hazardous event occurring)”
- **Risk = Exposure** (i.e. Probability) **X Hazard Potential** (i.e. Severity)

- **Gathering Data - When we perform an Occupational Hygiene Risk**

**Assessment, one must take the following into consideration:**

- **Identification** of the significant OH Hazards (Hazardous Chemical Substances, Physical Stressor, etc.) to which employees are being exposed to;
- detail description on where such Hazard/s are present;
- the nature of the key workplace operations and activities that pose the greatest potential for exposure to the significant hazard/s identified, i.e. detailed task descriptions that explain why and how employees become exposed to the significant hazard/s identified;
- the physical and/or chemical properties of the hazard e.g. nature of those hazardous chemical substances identified, e.g. gases, fumes, vapour, mists, fibers, dusts etc., type of noise e.g. impulse, fluctuating, steady, continuous intermittent, etc., type of thermal stress, e.g. high/low air temperature, radiant heat, etc., type of non-ionizing radiation, e.g. visible light, UV-radiation, IR radiation, etc.;

# Hazard Recognition - Continued

- the route of entry (where applicable i.e. inhalation, absorption, ingestion etc.) and health effects that these significant Occupational Hazards can have on employees (researching of the target organs and significant health effects associated with the significant hazard/s identified);
- the pattern of exposure, i.e. intermittent, continuous etc.,
- duration and frequency of employee exposure to the significant hazard/s identified;
- the occupations and number of employees who are being exposed the significant hazard/s identified;
- critical evaluation of the control measures in place, i.e. engineering, administration, personal protective equipment etc.;

**Looks Very Simple and Easy**

# How to Recognise – Not so simple

## What a Short Course cannot teach you, or the “tool” cannot do for you:

- To actually understand a production process. To be able to discuss the process with the Process Engineer or Chemist and understand how each process step presents its own variety of Hazards (which is much more than drawing up a List of Raw Materials and Process Chemicals and Products).
- That Tetra-chloroethylene and Perchloroethylene is the same thing. What the difference is between crystalline Silica, amorphous Silica and Silicate. How the chemical composition of refractory material changes, from when it is installed to when it is removed. That when soldering on refrigeration equipment, Fluorophosgene can be formed and not just Lead fumes and that the grease stained rag in the mechanic’s back pocket is a source of chronic mineral oil skin exposure.
- The difference between Nitrous oxide, Nitrous fume, Nitrogen dioxide and Nitrogen, or between Lime stone and Lime, and between slaked Lime and unslaked Lime.

# How to Recognise – Not so simple

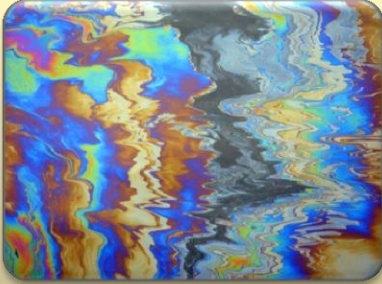
## *Continued:*

- To identify clinical evidence of exposure to a Hazard.
- The difference between dust, fume, smoke and vapour – very important.
- How to evaluate an extraction ventilation system – to analyse the design and the performance specifications in order to conclude whether it will be efficient or not, what the principle of capture velocity is and that an overhead welding fume extraction system is of very little use.
- How to evaluate the efficiency of PPE – that Latex or PVC gloves is the wrong choice when working with petroleum products and that a half-mask respirator fitted with an A2P2 cartridge is the wrong choice when working with acids (what does ABEKP and FFP2 actually mean?).
- That one should also consider synergistic effects when dealing with mixed exposures.
- That a dust and a fume of the same chemical composition have different Hazards.

# How to Recognise – Not so simple

## *Continued:*

- How and where to get data to evaluate the hazards identified – **Google is the wrong answer**. Raw materials may have MSDS's, but by-products and intermediates don't. Manufacturers and suppliers often lie in MSDS's – how to recognise that.
- Etc.



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## 4. Conclusion

# Who Should Conduct a Risk Assessment

## Someone that:

- Has a working knowledge of engineering and chemical processes, as well an understanding of the mechanics and process chemistry thereof.
- Good knowledge of chemical substances, and physical hazards and experience in the anticipation and recognition thereof, as well of clinical signs of exposure to them all.
- Is almost obsessive about detail.
- Knowledge of toxicology.
- Access to updated, validated hazardous substance databasises – and being able to access the required knowledge quickly.
- Has extensive knowledge of PPE – their intended purposes and limitations
- Has experience in the testing and evaluation of Engineering Control measures.

# Who Should Conduct a Risk Assessment



**Your highest qualified, most experienced Occupational Hygienist.**



**The Quality of your Risk Assessment (and therefore your entire OH Management Programme), is therefore not a function of your Risk Assessment Process (or Tool), but the quality of the data that you put into it – the product of your data gathering skills and abilities.**

**Without that, many hazards will not be identified, and what is not identified will not be monitored or managed (like it does not exist). Ever heard of the ostrich?**

**A Risk Assessment that started off with comprehensive Hazard Identification, by the right person, is like the foundation of a building structure .....**

- **General Discussion and Questions**

# Thank You



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