BRITISH SAFETY COUNCIL

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Health & Safety South

SANDOWN PARK, SURREY · 28-29 FEBRUARY 2012

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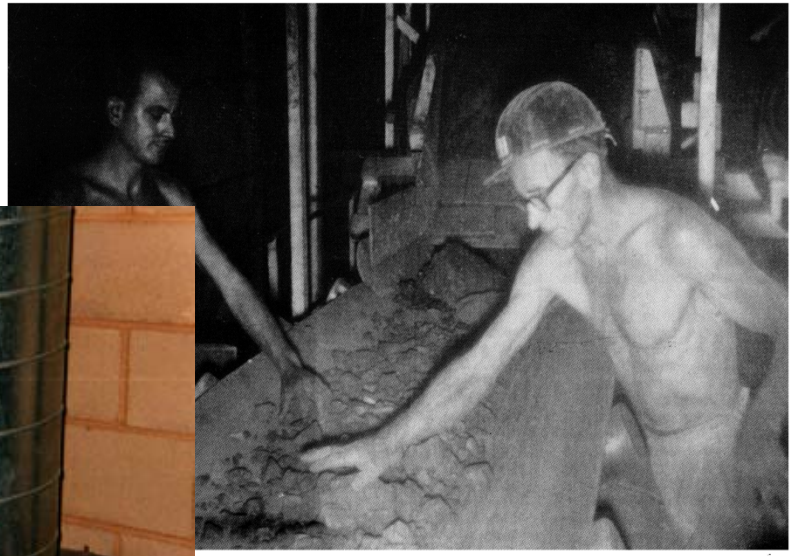
Dust Monitoring



Legislation

- Principle regulations in UK are COSHH –

  The Control Of Substances Hazardous to Health

- Central requirements are:

  Carry out suitable and sufficient assessment of the risks to the health of employees and any other person who may be affected…..if they are exposed to substances hazardous to health

COSHH

COSHH Reg. 6 - Assessment

COSHH Reg. 7 - Control

COSHH Reg.10 - Monitoring

Exposure Limits

The HSE policy is set out in Guidance note WEL's (Workplace exposure limits) & EH40 (Advice)

These limits are set by the Heath & Safety Commission through:

- Advisory committee on Toxic Substances (ACTS)
- the Working Group on the Assessment of Toxic Chemicals (WATCH)

Exposure Limits

Old Standard. (TWA, STEL, MEL)

Compliance achieved if exposure below this value

General Dust = 10mg/3m

MEL:

Exposure must be as far as below limit as is reasonably practicable

WEL's (Replaces TWA, STEL, MEL)

Examples of Exposure

Rosin-based solder fume

TWA/Long Term Exposure	0.05mg/m3
Short Term Exposure	0.15mg/m3

Nickel, organic compounds

TWA/Long Term Exposure	1mg/m3
Short Term Exposure	3mg/m3

Exposure Monitoring Strategy

Standards related to personal exposure

- Initial Survey
- Basic Survey
- Detailed Survey

Exposure Monitoring Strategy

- Whose exposure should be measured?
- What to measure?
- Where to collect the sample?
- When to measure?
- Why sample?
- How to sample?

Exposure Monitoring Strategy

- Direct / indirect (area)
- Numbers of people exposed
- Substances workers are exposed to
- Hazardous and physical properties of these `substances
- Points of release of substance
- Process details

Where ? - Area sampling

- To demonstrate the spread of contamination from a source
- To measure the exposure of workers in nearby areas or those not directly involved in the process
- To demonstrate the effectiveness of control measures
- To investigate the source(s) of contamination

Exposure Monitoring - When ?

- How long to sample for?
- How many measurements?
- How often to sample?

Exposure Monitoring - When ?

- Pattern and duration of exposure/ shifts
- Work practices
- Often choose “worst case”

- Control measures (LEV)

Variation in Exposure

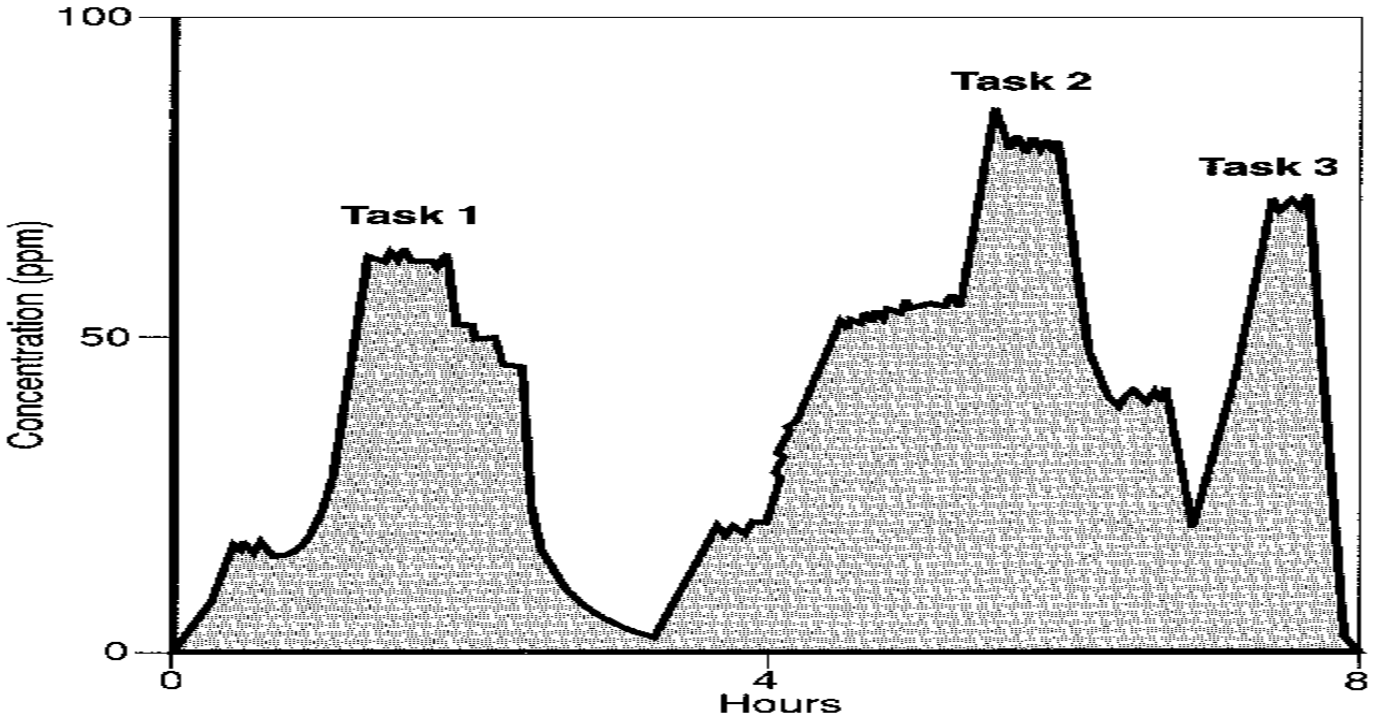


Figure 1a An exposure pattern for a working shift (8 hours)

Basic Survey

- Following initial appraisal
- New process or OEL

Detailed Survey

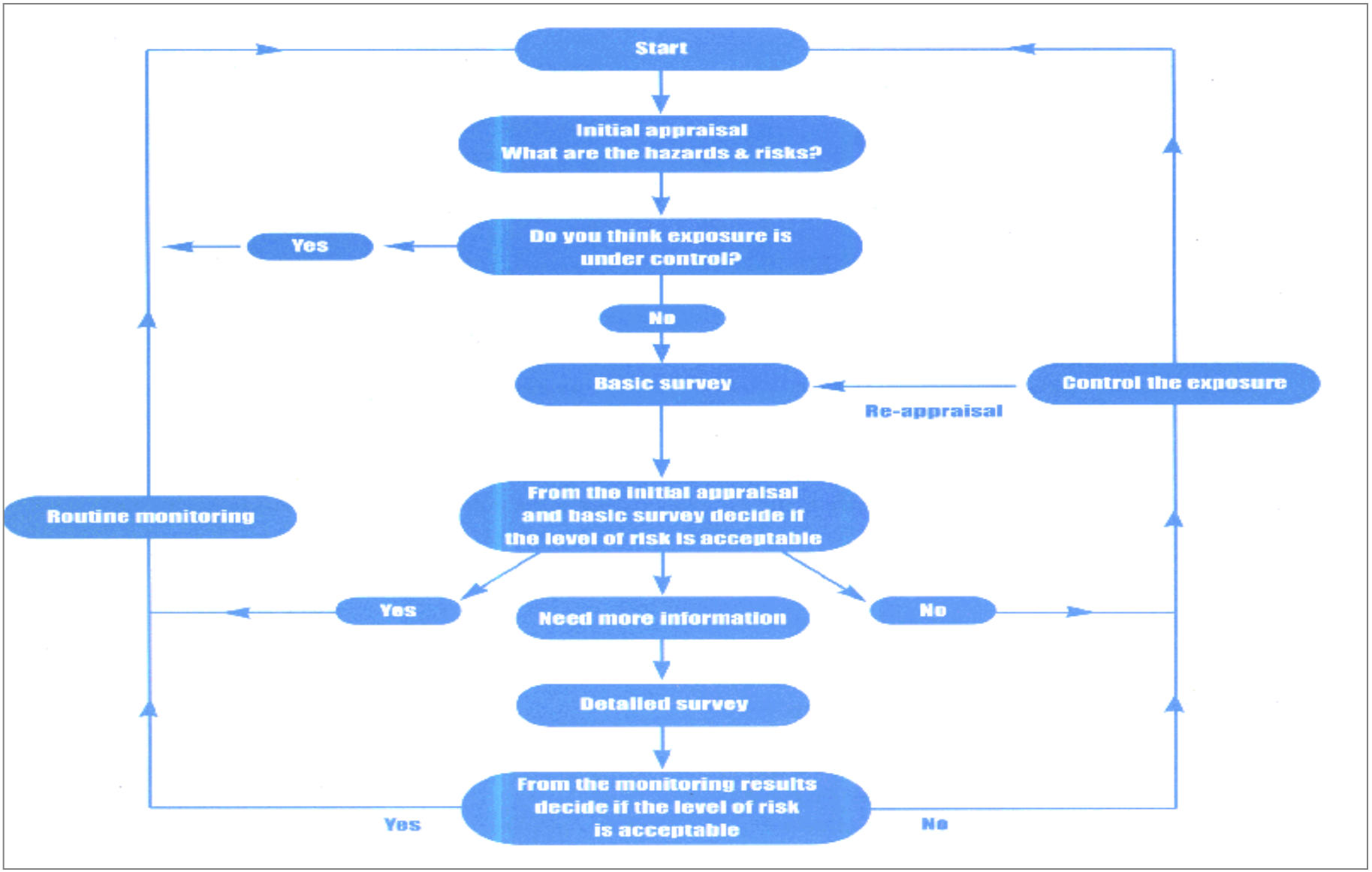
- Complex process
- Carcinogens or respiratory sensors
- Exposure close to MEL’s

Routine Monitoring

- No legal requirement on frequency of monitoring

Exposure Monitoring Strategy

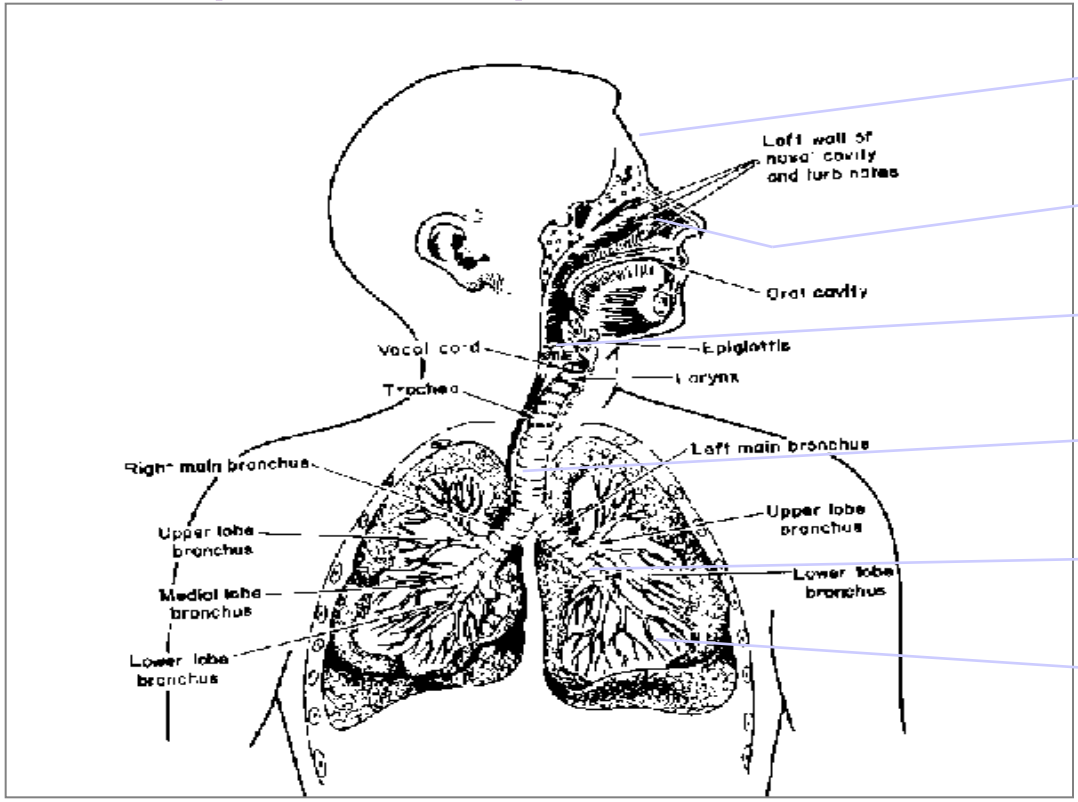
- What to record?
- What to do with the data?
- Act !
- PPE ?


Start
Initial appraisal
What are the hazards & risks?
Do you think exposure is under control?
Yes
No
Basic survey
Control the exposure
Re-appraisal
From the initial appraisal and basic survey decide if the level of risk is acceptable
Routine monitoring
Yes
Need more information
No
Detailed survey
From the monitoring results decide if the level of risk is acceptable
Yes
No

Particulate and Health

Effects strongly related to penetration capability

Smaller particles penetrate further into the lungs



9 - 10 µm

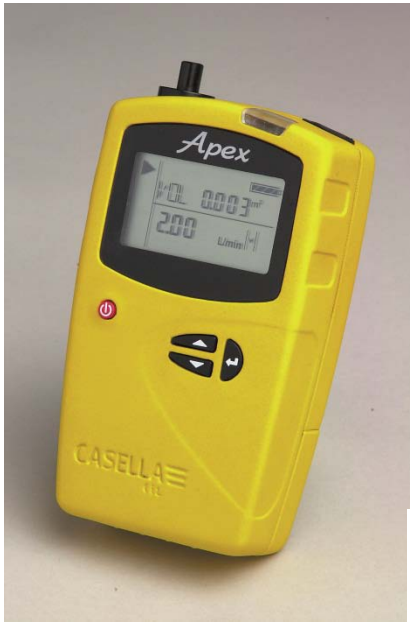
5.8 - 9 µm

4.7 - 5.8 µm

3.3 - 4.7 µm

2.1 - 3.3 µm

0.3 - 2.1 µm


Apex
CASELLA


Apex


CASELLA
MICRODUST pro

Sampling Heads

- Captures particulates by dynamic filtration using International Methods and Conventions
- Controlled by Legislation using National and International Standards

Methods and Standards

- Methods / Conventions
- NIOSH
- OSHA
- MDHS
- ISO International Standards
- (C)EN European Standards

Sampling Heads and Filters

- Dust and Vapor

  Total Inhalable, Respirable, CIS, I.O.M. Heads

  $PM_{2.5}$, Respirable, PM_{10} & Thoracic Filters

- Gas Vapor

  Sorbent Tubes, Gas Bags

  Impingers & Bubblers

I.O.M. Sampling Head

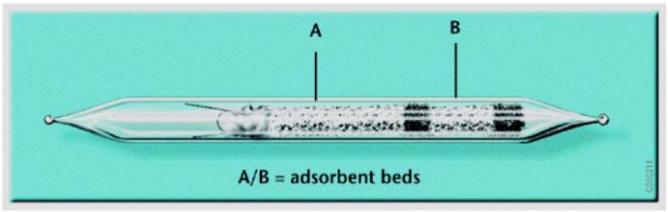
- Firmly established both in America and the UK
- True Inhalable Sampler
- Cassette system, therefore eliminates direct handling
- Avoids under sampling
- Can be used with PUF filters.

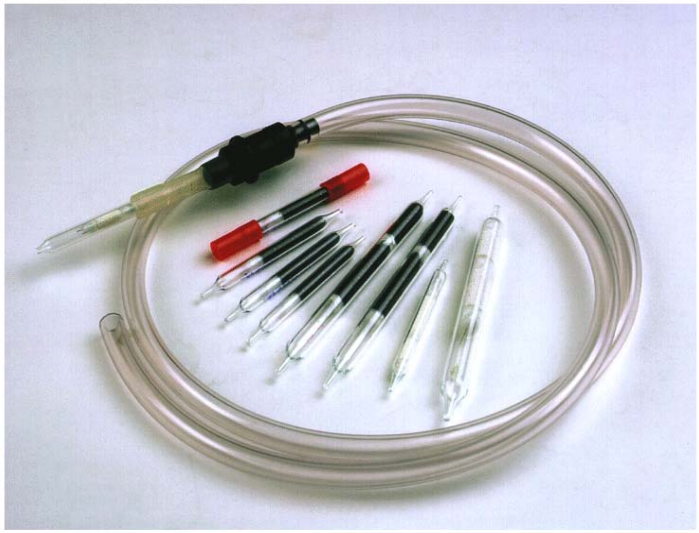
Respirable Sampling Head

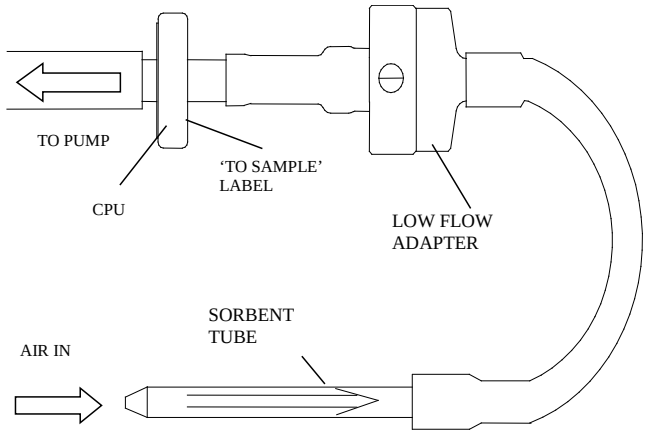
- PLASTIC CYCLONE (Dewell Higgins)
- Spins out the heavier particles by centrifugation
- Leaving the lighter respirable particles (typically 4 microns.) to be drawn up into the filter

Gas & Vapour Sampling

- Gas Bags
- Adsorption Tubes
- Impingers & Bubbler
- Arnold Bubblers







Flow Calibration

- Flowmeters
- Dry Flow Flowmeter
- Low Flow Adapter
- Flowmeter Stand

Simple

Reliable

Accurate solution

Thank You

Questions ?

Shaun Knott
Casella Measurement

01234 844100
Or
07730 818267

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Shaun Knott

will be available for further questions on the BSC stand 22, directly after the presentation

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