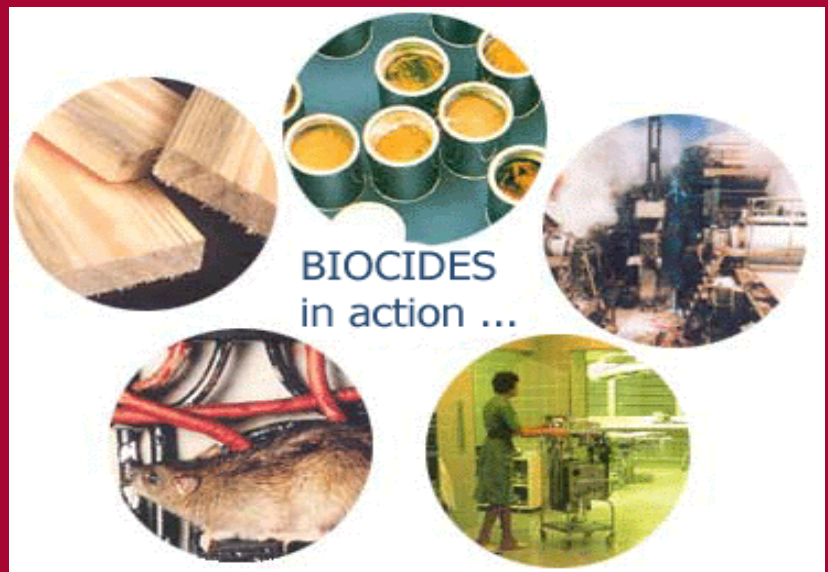
The principles of good practice for the control of exposure to biocides



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Biocides Exposure Assessment Section

HSE's Occupational Hygiene Unit

Content

- What are the problems / difficulties that have to be addressed
- Responsibility of employers / employees
- Principles and effects of good practice
- What influence do we have
- CoSHH essentials
- Case study
- Barriers to implementing

Problems / difficulties for occupational hygiene

- Anticipate
- Recognise
- Evaluate
- Control

A fusion of ‘individual’ ‘scientific / workplace’ and ‘management’ tactics

Impact of ‘conventional’ hierarchy of control

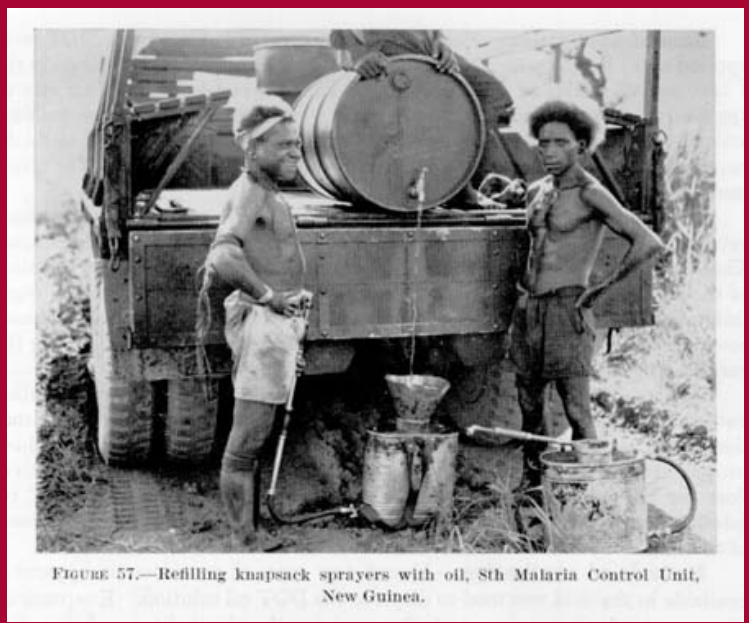


FIGURE 57.—Refilling knapsack sprayers with oil, 8th Malaria Control Unit, New Guinea.

- Eliminate
  - Change process
- Substitute
  - Less harmful materials
- Isolate
  - Contain, automate
- Engineer
  - Mixing/loading, Ventilation
- Administrative controls
  - Working practice
- PPE
  - Personal protection (personal hygiene)

General principles of prevention

- Avoid risks
- Evaluate risks that cannot be avoided
- Combat at source
- Adapt the work to the individual
- Adapt to technical progress
- Coherent overall prevention policy
- Collective protection measures
- Appropriate instructions

What is meant by ‘Good Control Practice’?

- A consensus view of the hardware, systems of work and other measures that need to be put in place to control the risk

Hardware Vs Software

CoSHH amendments 2004 principles of good practice

Adequate control

Applying principles of good practice

Not exceeding WEL

Maintenance

Regular maintenance of physical controls

Review and revise systems of work / supervision

- Minimise emissions at source
- All relevant routes of exposure
- Controls proportionate to the health risk
- Most effective & reliable option
- PPE *in combination with other controls*
- Check & review
- Inform & train
- Do not increase overall risk to health and safety

CoSHH essentials

How far will CoSHH essentials take us?

Control not just assessment

System to determine control band (*COSHH Essentials*)

HAZARD BANDS

A – skin / eye irritant
B – harmful
C – severe irritant, toxic, corrosive,skin sensitiser
D – very toxic, harmful to reproduction
E – cancer, genetic damage, asthma

EXPOSURE BANDS

Amount:

Small
- (g, ml)

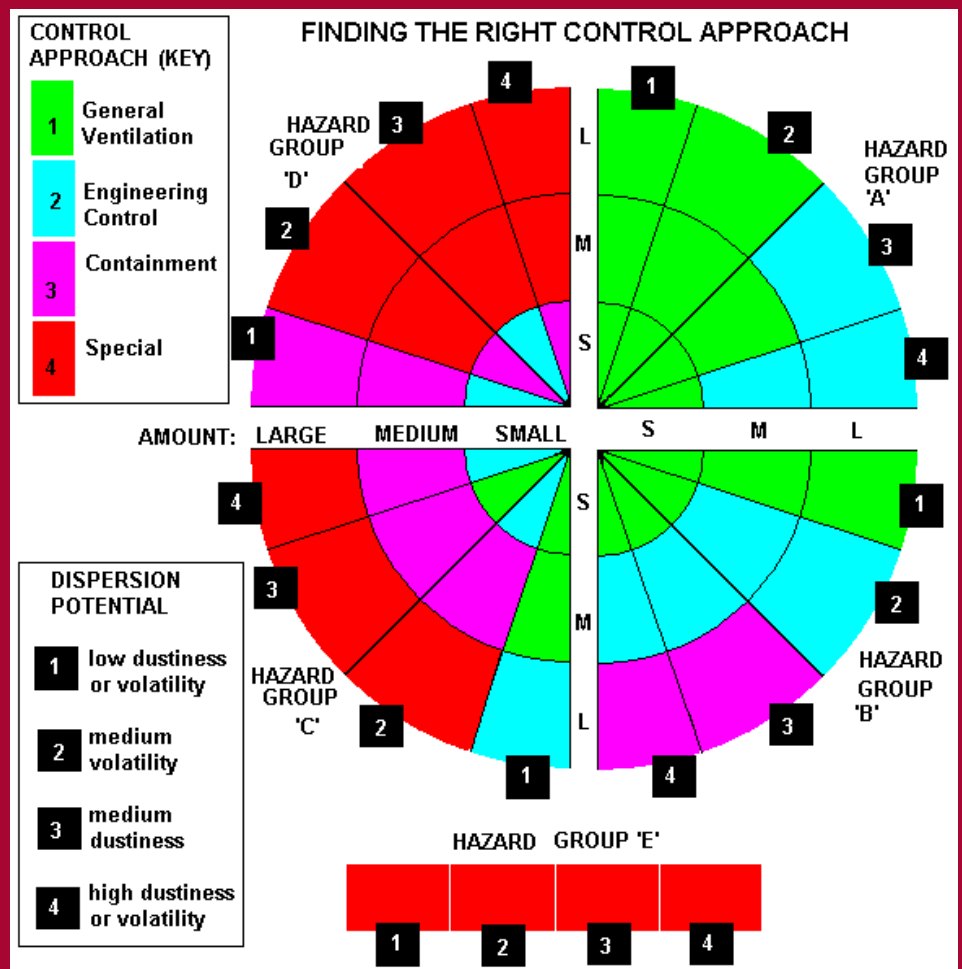
Medium
- (kg, l)

Large
- (t, m^3)

Dispersion Potential
Low (pellets or BP>150C)
Medium (granule or BP 50-150C)
High (powder or BP <50C)

INCREASING RISK

Can banding work for biocides?



Personal Protective Equipment (PPE)

- Work of short duration
- Control of residual risk

No substitute for engineering control.

Skin protection

- Barrier, comfort and cost
- How well does it protect?

  head: *(hood or helmet)*

  face / eyes: *(visor or goggles)*

  body: *(coverall, chemical suit, apron)*

  hands: *(gloves, gauntlets, skin cream)*

  feet: *(boots)*

Coveralls ….. and skin exposure

- Permeation, penetration and run-off
- Porous coveralls offer some protection
- Impervious coveralls offer less
- Work clothing beneath coveralls
- Laundry - vitally important

Gloves ….. and skin exposure

- Permeation
- Penetration
- Selection of gloves

- Inner surfaces always contaminated
- Single use gloves – throw away after one use
- Latex – low protein, low dust only
- All gloves – dispose of at end of the work day unless you show they are not contaminated and protective capacity is sound

Issues

- Engineering cannot eliminate exposure
- Engineering can control exposure
  - *but no guarantee with humans around*
- Prove protection – look, test and record
  - *do not just assert that it works*
- Most accidents have human error as a direct cause

Case study: planting tree saplings

Is good control practice being used?

Is the risk of the worker being exposed adequately controlled?

Design and operate processes and activities to minimise emission, release and spread of substances hazardous to health

- List all work groups and unit operations
  - Electrodyne operator, planters, spray operators, maintenance
- Design to minimise exposure
  - Smaller bags
- Reduce number and size / quantity of emission source
  - Question the work load

Take into account all relevant routes of exposure

- Inhalation
  - Low vapour pressure
- Dermal
  - Yes
- Ingestion
  - Yes

Which is the most significant?

Control exposure by means that are proportionate to the health risk

- What is the health risk?
  - Parasethesia
  - What else
- How far do we go?
  - WEL
  - Consider severity of harm, likelihood of harm occurring

Choose most effective & reliable control options that minimise escape & spread of substances hazardous to health

- Each unit operation & overall situation
- Focus on most significant sources first
  - During electrodyne operation / planting or spraying
- Hierarchy of control
  - Eliminate, automate, ?

Who designs and chooses best options?

Where adequate control of exposure cannot be achieved by other means, provide, in combination with other control measures, suitable PPE

- PPE – ‘The last resort’
  - Protective clothing: overalls, gloves, individual issue
  - Storage, clean and repair
- Compatibility of PPE
- Look at the environment

Check & review regularly all elements of control measures for their continuing effectiveness

- Working technique, posture, workload
- Equipment maintenance, daily checks
- Management system to schedule checks on all elements of control measures

Inform and train all employees on the hazards & risks from substances with which they work & the use of control measures developed to minimise these risks

- Training programme
  - Do operators understand the health risks?
  - Have the limitations of exposure controls been explained?
  - Is there confidence that the control measures in place are effective?
  - Easy to use?
  - Proven to work long-term?
  - Are operators equally confident?

Ensure that the introduction, of measures to control exposure, does not increase the overall risks to health and safety

- Other H&S risks
  - Vision, manual handling, trips & falls
- New risks?

Are the principles of good control practice in place?

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What are the barriers to achieving good practice?

Lack of knowledge of controls options

Quick / cheap

False reassurance

Will it work

PPE

No fear of the regulator

Other priorities

Unseen chronic health effects

money

Never had an incident