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Unit „Occupational Exposure“

Current BAuA/GTZ research on occupational exposure and control strategies: recent results from various industrial areas and from Indonesian SMEs

Overview

I Evaluation of the COSHH Essentials Core Model

- General discussion of the database
- Comparison of measured data against model predictions

II Chemical Management in Indonesian SMEs

- Basic concepts
- Experiences from visiting companies
- Outlook

Data Sources

- BAuA field studies (1991 - 2001)
textile industry, plastics processing, rubber production, screen printing, offset printing, furniture industry, optician workshops
- Field study of the University of Wuppertal
- Data from the Risk Assessment of Existing Substances
- Criteria documents for OELs

General Characterisation of the Database

- About 1000 personal exposure measurements
- Shift values and short term values
- Typical sampling time for representative scenarios
1 h - 4 h

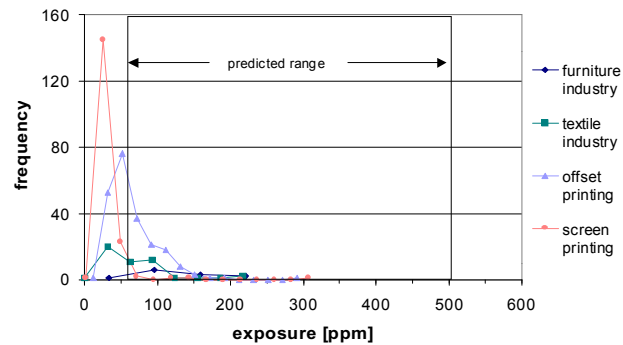
Scenarios

- Lower control strategy in case of mixed scenarios
- Qualitative characterisation of LEV

I) Model Scenario for Liquids (Litre):

- **Scale of use:** Litre (10, 25, 50 litre drums and kegs)
 - **Volatility:** Medium
 - **Control strategy:** General ventilation
- Area:** *Furniture industry, textile industry, screen printing, offset printing*
- Tasks:** *Mixing, filling, cleaning*

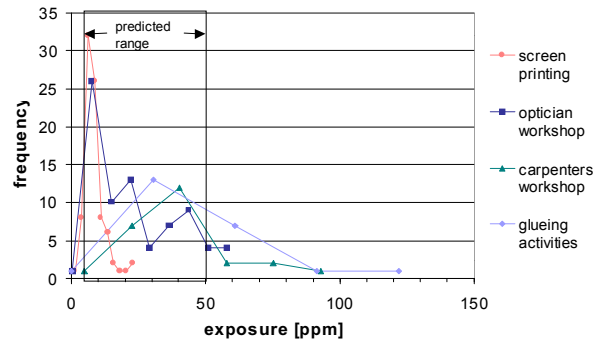
Model Scenario I Liquids (Litre):



II) Model Scenario for Liquids (Millilitre):

- **Scale of use:** Millilitre (100, 500 ml bottle, 1000 ml can)
 - **Volatility:** Medium/high
 - **Control strategy:** General ventilation
- Area:** *Optician workshop, carpenters workshop*
- Tasks:** *Cleaning, mixing, painting, applying adhesives*

Model Scenario I Liquids (Millilitre):

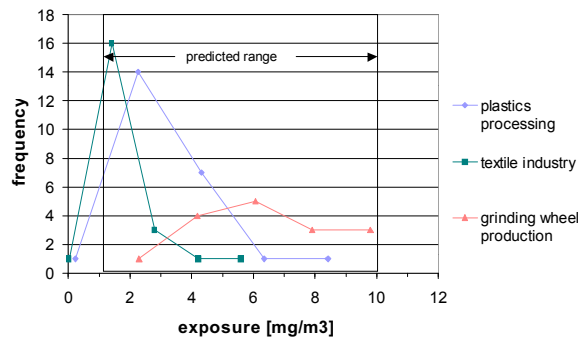


III) Model Scenario for Solids (Kilogram):

- **Scale of use:** Kilogram (20, 25 kg container/bags)
- **Dustiness:** Medium
- **Control strategy:** General ventilation

- Area:** *Plastics processing, textile industry, grinding wheel production*
- Tasks:** *Weighing, charging the mixer, bag disposal*

Model Scenario III Solids (Kilogram):

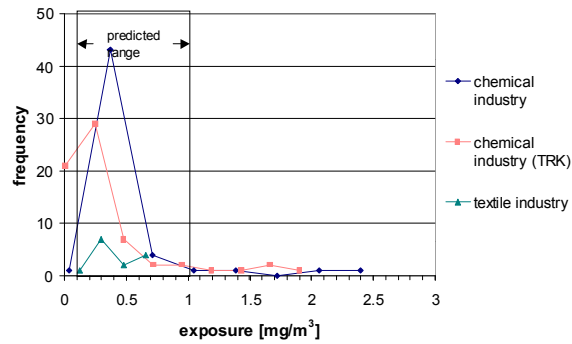


IV) Model Scenario for Solids (Kilogram):

- **Scale of use:** Kilogram (25 kg bags/containers, 200 litre drums)
- **Dustiness:** Medium
- **Control strategy:** Local exhaust ventilation

- Area:** *Chemical industry, textile industry,*
- Tasks:** *Filling, weighing, charging the reactor, mixing*

Model Scenario IV Solids (Kilogram, LEV):



Measured data vs model predictions: lower, within or higher?

Control strategy	Exposure potential (solids)	
	tonnes, medium/high dusty	kilogram, medium/high dusty
general ventilation	rubber production	plastics processing
		textile industry
		grinding wheel production
local exhaust ventilation		chemical industry
		chemical industry (TRK)
		textile industry

Legend: Yellow = lower, Green = within, Blue = higher

Measured data vs model predictions: lower, within or higher?

Control strategy	Exposure potential (liquids)	
	litre, medium/high volatil.	ml, medium/high volatil.; m³/litre, low volatil.
general ventilation	furniture industry	carpenters workshop
	textile industry	optician workshop
	offset printing	glueing activities
	screen printing	screen printing
local exhaust ventilation	paint production	
closed systems	chemical industry	
	chemical industry (TRK)	

Legend: Yellow = lower, Green = within, Blue = higher

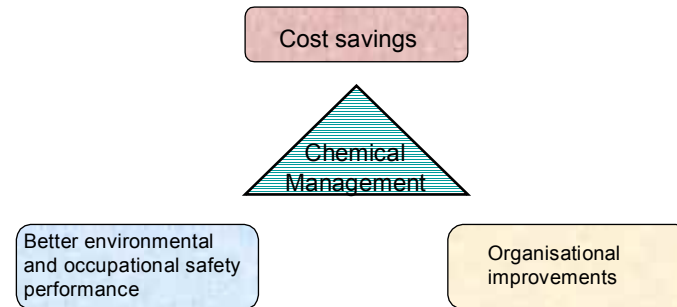
II Chemical Management in Indonesian SMEs

- German Agency for Technical Cooperation (GTZ)
- Political, economic and social development of developing countries
- Financed by: German Federal Ministry for Economic Cooperation and Development

GTZ Project for Chemical Safety in Developing Countries

- Activities in Argentina, Ghana, Gambia, Thailand (safe handling of pesticides, enforcement of environmental regulations)
- Since 1998 Project for Chemical Management in Indonesian SME's

Concepts of Chemical Management



GTZ Project in Indonesia



Textile printing in Indonesia



Textile printing in Indonesia



Mixing room



Indonesian Tannery



Dye kitchen



Indonesian Tannery



Observations made in small Indonesian Enterprises

- Almost no MSDS are available
- Preconditions for doing risk assessment are very weak

Observations made in medium Enterprises:

- A minimum of preconditions to work on Chemical Management available
- The companies aim to improve their environmental performance in order to improve their competitiveness on the market

Chemical Management step-by-step

- Step 1**
 - identify hot spots
- Step 2**
 - make a chemical inventory
- Step 3**
 - calculate potential losses, consider substitutes, determine control measures

GTZ: Further Steps

- Chemical Mangement Guide is available in English and Bahasa Indonesia
- Test implementation supervised by local consultants
- Test implementation in other countries
- Spanish Version of the Chemical Management Guide is coming soon