

Risk Management and control of exposure

*SAIOH 2019 PDC 15th of October,
Hans Thore Smedbold*

Part 1 - Introduction

PREPARED.

Disclaimer



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Objectives



Give an introduction and outline the main principles in risk assessment and design and management of controls applied in the field of occupational hygiene.

Skills:

Be able to relate the knowledge to your own work as occupational hygienist.

The handouts and some additional material is available a:

<https://yrkeshygiene.no/utgivelser-kurs-og-seminarer/saioh-risk-management-and-exposure-control.html>

List of topics



- An introduction to the four layers of risk management
- Issue based risk management
- Bowtie Analysis
- Terminology and Definitions
- Hazard and Priority Unwanted Event identification (PUE)
- Control Selection and Sorting
- Critical Control Selection
- Control Monitoring Framework
- The application of technology in control monitoring

Main content



- Risk management
- Risk assessment
- Exposure controls
- Control monitoring

Please



- Mobile phones
- Breaks
- Be engaged
- Ask questions
- Share experience
- Back on time

Schedule



13:00 Introduction, risk management

14:00 Risk assessment

15:00 Controls

16:00 Monitoring

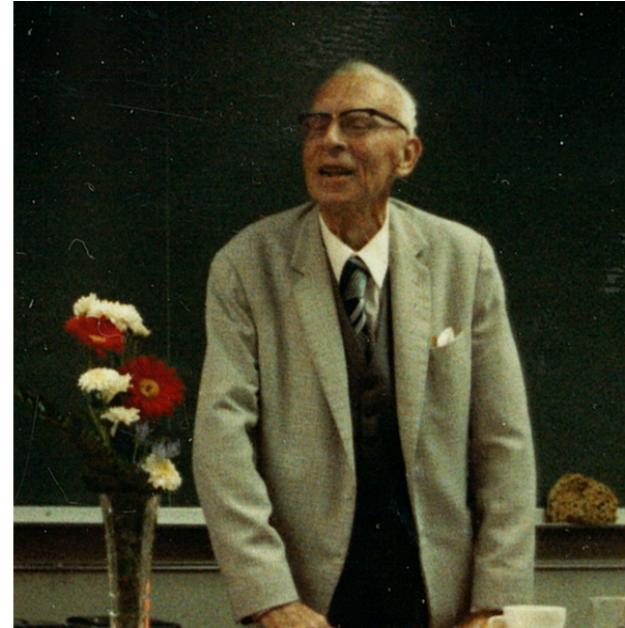
15 min breaks between each part

Why have you really become an OH ?

“Så hvorfor har dere egentlig tenkt å bli yrkeshygienikere?”

Dr. Karl Wülfert utfordret sine tilhørere fra første stund med krav til yrkeshygienikerens kvalifikasjoner og egenskaper - ikke bare faglig, men også til det moralske og sosiale engasjementet som han anså som en forutsetning for dette yrket.

Av Hans Thore Smedbold, første gang trykket i Yrkeshygienikeren 2005 nr 1.



Introduction



- You (experience, type of industry and why)
(group of 3-4)
- Me

Early 80-ties: The beginning of the Norwegian epidemic of solvent induced encephalopathy



×

Chronic Toxic Encephalopathy in a Painter Exposed to Mixed Solvents

Figure 2. Magnetic resonance imaging studies in a patient (a former painter) with chronic toxic encephalopathy (13 toxic agents). (A) T2-weighted axial image through the lateral ventricles demonstrating bilateral atrophy. (B) T1-weighted coronal image demonstrating diffuse cortical atrophy and that the hippocampi and cerebellar vermis are not disproportionately involved. (C) T1-weighted midsagittal image demonstrating proportional atrophy of the cerebellar vermis.

(Feldman et al., Environmental Health Perspectives 107 | 1999)

However:

- Limitations in design and strength of association make it impossible to draw reliable conclusions regarding nervous system damage from organic solvents. (Ridgeway et al., 2003)

Hans Thore Smedbold



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discipline leader OH, researcher, MSc, CIH

8 years – OH at Dep. of Occupational Medicine

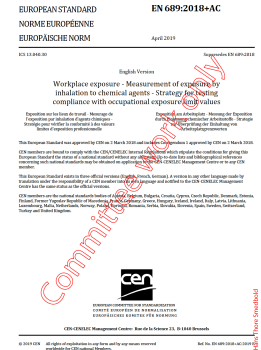
18 years – Consultant (DNV, OHS, Proactima)

Norwegian Occupational Hygiene Association

General secretary, faculty and board member, IOHA board,
OHTA board

PhD (ongoing) - regarding exposure assessment and modelling

www.yrkeshygiene.no (mostly in Norwegian)



Industries by GDP

South-Africa

Agriculture (3%):

corn, wheat, sugarcane, fruits, vegetables;
beef, poultry, mutton, wool, dairy products

Industries (30%):

mining (world's largest producer of platinum, gold, chromium), automobile assembly, metalworking, machinery, textiles, iron and steel, chemicals, fertilizer, foodstuffs, commercial ship repair

Service (67%)

Norway

Agriculture (2%):

barley, wheat, potatoes, pork, beef, veal, milk, fish

Industries (34%):

petroleum and gas, shipping, fishing, aquaculture, food processing, shipbuilding, pulp and paper products, metals, chemicals, timber, mining, textiles

Service (64%)

source: CIA world handbook (2017)

Comparing Industries by number employed

South-Africa

**TABLE 1
EMPLOYMENT BY INDUSTRY (SOUTH AFRICA, FIRST QUARTER 2008)**

Industry	Jan-Mar (2008)	
	Number ('000)	% share
Agriculture	799	5.9
Mining	333	2.4
Manufacturing	1,988	14.6
Utilities	95	0.7
Construction	1,112	8.2
Trade	3,156	23.2
Transport	747	5.5
Finance	1,667	12.2
Community and social services	2,564	18.8
Private households	1,163	8.5
Total	13,623	100.0

Source: Quarterly Labour Force Survey, Table C, Quarter 1, Statistics South Africa

Unemployment rate: 29%

Norway

Employed persons 15-74 years by sector and industrial division. 4th quarter ^{1 2}					
The whole country	Sum all sectors	Central government	Municipal government	County municipal government	Private sector and public enterprises
2017	2 625 555	298 286	491 122	45 046	1 791 101
2018	2 681 955	302 979	501 276	45 365	1 832 335
2018					
All industries	2 681 955	302 979	501 276	45 365	1 832 335
Agriculture, forestry and fishing	59 684	25	76	10	59 573
Industrial activities	520 480	3 653	11 739	0	505 088
Trade etc., transport, comm., financial interm., estate, business act.	1 028 597	11 976	19 465	576	996 580
Public adm., defence, soc. security	168 870	113 446	49 386	5 928	110
Education	221 411	43 045	114 992	34 292	29 082
Human health and social work activities	555 331	124 542	290 584	3 565	136 640
Other service activities	107 912	6 292	15 034	994	85 592
Unspecified	19 670	0	0	0	19 670

¹ As from 2015, the statistics are based on new data sources (a-ordningen), see further details in «About the statistics». The total number of employed persons is no longer coordinated with the Labour Force Survey (LFS) as before 2015, and does not correspond any more with LFS's total number of employed. The figures for 2015 and onwards are therefore not comparable with the figures for previous years. For more information, see the article linked to the 2015-figures: <http://www.ssb.no/en/arbeid-og-lonn/statistikk/regsys/aar/2016-05-27>

² All 1s and 2s have been replaced by 0 or 3 in order to meet privacy requirement.

Unemployment rate: 3,8%



- All work related accidents, illnesses and reduced health is preventable.
- Is all about control of energy and exposure.
- It is always possible to do something.

Control of exposure



- What is the most important challenges in your work when it comes to control of exposure ?
- Small groups (3-4) discuss for 5 minutes
- Summing up



Sources



- [SAIOH](#)
- [OH Learning](#)
- [IOHA \(links to other associations\)](#)
- [ISO 45001](#)
- [PDC handouts etc.](#)

If any question or comments

Be welcome to contact me at:

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Prepared.