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# Strengthening the Occupational Health Expertise and Scientific Performance of Public Health Institution of Turkey



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# Essentials of Occupational Diseases

## PPT B 2.1.1 Essentials

# Learning Objectives

1. Knowing the stepwise assessment of occupational diseases
2. Knowing the importance and draw-backs of taking an occupational history.
3. Able to discuss reasons for underreporting
4. Knowing the main principles of classification systems for Occupational Diseases

# Background 1

## **Classic occupational diseases**

Clear, often monocausal relation to a specific exposure. In several countries a relative risk of 2 is taken as criterion to decide if a disease can be included on the list of compensable occupational diseases.

## **Work-related diseases**

diseases having more than one cause, including work. The relation between work and disease is recognizable on the individual level (e.g. repetitive movements and shoulder complaints), but it is often not clear if exposure at work is the decisive factor. Most musculoskeletal diseases and mental health disorders are judged as belonging to this category.

**Work-relatedness only in epidemiologic studies.** The relation between working conditions and disease effects can be demonstrated on population level but is difficult to explain in e.g. biological terms.

# Background 2

- Occupational Diseases can be regarded as:
- Collateral Damage
  - Work is usually beneficial for workers health
  - Not intended to harm
- Side-effect of work
  - Paralel with pharmacovigilance



- Und man siehet Sie im Dunkeln,
- die im Lichten sieht man nicht

# Underreporting of Occupational Diseases

- **Universal problem:**
  - 'Sous-declaration' ,
  - 'Dunkelziffern'
- **Why?:**
  - **Difficulties** with diagnosis:
    - lack of awareness (workers, doctors)
    - lack of knowledge and focus (doctors)
    - lack of diagnostic tools /time
  - **Denial** of the problem
    - Fear for consequences
    - Influencing of compensation criteria

# Assessment of Occupational Diseases

## 6-step approach

1. Consideration of evidence of disease:  
medical assessment
2. Consideration of toxicological and epidemiological data
3. Consideration of evidence of exposure  
Occupational history and biological monitoring
4. Consideration of other relevant factors  
Differential diagnostic issues
5. Evaluation and conclusion  
(validity of testimony)
6. Preventive Actions





# Assessment of Occupational Diseases



It often starts with suspicion: 'What is your Occupation?'

Can be triggered by active search

Wide range of Occupational Diseases

Some OD's clear diagnosis: allergic dermatitis (skin test),  
occupational asthma (challenge test)

Some OD's are more complex to assess: multidisciplinary  
assessments

OD-detective work is fun!!





# 21-year old farmer with acute intoxication

- Referred by insurance company 1 year after incident with tiredness and cognitive complaints
- Incident:
  - 6 hours coma with seizures in ambulance
  - Inhaling gases from cattle manure (hot summer; normally methane, now Hydrogene Sulphate?)
  - Sister was also involved with milder symptoms
  - Father saved both children
- Workplace visit to reconstruct the incident
- 2 years after: '8-hour working days like civil servants OK'  
Cognitive function tests improved to normal range
- 10 years after?
- Diagnosis: Acute Toxic Encephalopathy





**Volgorde v. Gebeurtenissen:**

1. B ziet half vallen en rent naar V om de mixer uit te zetten.
2. B + V naar de halveren om te vit de stal te halen
3. Zowel B als V vallen neer
4. A ziet vader uppen
5. A probeert ook een half te redden, maar valt ook neer.
6. V komt bij en haalt A en B uit de stal.
7. V heeft A en B eruit gehaald. Moeder reanimeert B.

**Diagram Labels and Actions:**

- GROEPS STAL**: Main stable area.
- TRAKTOR**: Tractor.
- MIX WAGEN**: Mixing wagon.
- ROOSTERS BOX**: Roosters box.
- DICHTE VLOER**: Dense floor.
- verf afkrabben**: Scrubbing paint.
- ziet vader vallen**: Sees father fall.
- naar half toe**: Towards half.
- ziet half vallen**: Sees half fall.
- valt neer**: Falls down.
- komt bij en haalt**: Comes and picks up.
- eruit**: Out.
- ziet mixer uit**: Sees mixer out.
- willen halveren eruit halen**: Want to get half out.
- KALF NEER**: Calf down.
- A valt neer**: A falls down.

# Toxic encephalopathy:

## acute and chronic organic mental disorders



Roberta F White, Susan P Proctor Solvents and neurotoxicity  
*The Lancet, Volume 349, Issue 9060, 1997, Pages 1239-1243*

Disorder	Duration	Symptoms	Residua
Acute <u>intoxication</u>	minutes to hours	CNS depression, psychomotor or attentional deficits	none
Acute <u>toxic encephalopathy</u>	minutes to hours	confusion, coma, seizures (cerebral oedema, CNS capillary damage, hypoxia)	permanent cognitive deficit may occur
Organic affective Syndrome	days to weeks	mood disturbance (depression, syndrome irritability, fatigue, anxiety)	none
Mild chronic toxic encephalopathy	<u>years</u>	fatigue, mood disturbance, cognitive complaints insidious onset Cognitive deficits (attention, motor functioning, memory)	improvement may occur in absence of exposure but permanent mild cognitive deficits can be seen
Severe chronic toxic encephalopathy	<u>years</u>	severe cognitive and affective change interfering with daily living Neurological deficits: abnormalities seen on some <u>neurophysiological or neuroradiological measures</u> (CT, MRI, EMG, EEG)	<u>permanent cognitive dysfunction</u>

# Exposure Assessment

- The process of estimating or measuring the magnitude, frequency and duration of exposure to an agent
- Measurements: environmental- and bio-monitoring
- Occupational history: rough estimate, but often the only way of retrospective exposure-assessment

# Taking an Occupational History

- Workers know best; ask them to get better insight:
  - Homework: life long occ. history
  - Drawings, photograph's
- Doctor's knowledge of jobs helps
  - Targeted information
- Ask the right questions:
  - [x] *Do you work in a dusty environment?*
  - [x] *What tool makes the dust?*



# Occupational History;

## Additional resources:

- Job description, data sheets, website of company
- Job-exposure matrices from epidemiological studies
- Desk research: tox data, similar cases
- Workplace visit: golden rule
- Measurements: environmental and biomonitoring

*British Journal of Industrial Medicine* 1985;**42**:777–783

### A job-exposure matrix for use in population based studies in England and Wales

B PANNETT, D COGGON, AND E D ACHESON

*From the MRC Environmental Epidemiology Unit, University of Southampton, Southampton General Hospital, Southampton SO9 4XY, UK*



# Case reports; difficulties in completing the records

- Acute poisonings:
  - Happening in different, often unexpected workplaces; inadequate labelling
  - Medical aspects: cases are referred to local hospitals often lacking know-how of occupational toxicology
  - Exposure assessment: hours after the incident more or less adequate measurements
- Long-term exposures:
  - Retrospective exposure assessment



# Taking an Occupational History

## translating Bradford Hill's causality criteria into a clinical context

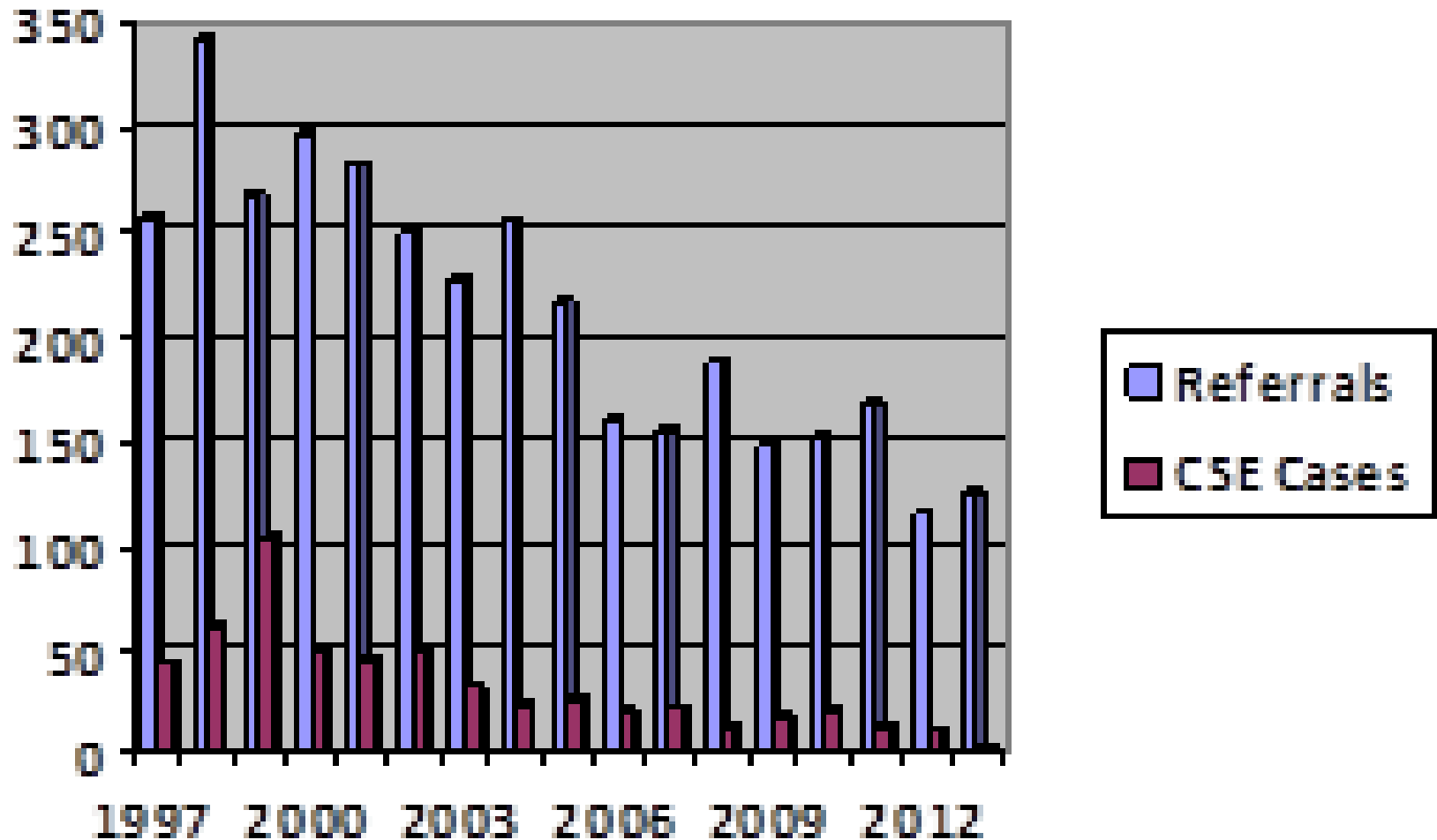
- Processing the information:
  - **Clinical Questions**
    - Temporality
    - Reversibility
    - Exposure-respons
  - **Work questions**
    - Strenghts of the association
    - Specificity
  - **Other data; information processing:**
    - Consistency
    - Analogy
    - Biological plausibility

# Clinical questions:

- When in relation to exposure do / did the symptoms start? temporality
- Are the symptoms decreasing when the exposure is stopped? reversibility (*in acute and chronic cases*)
- Are the symptoms worse when performing tasks or in places with higher exposure? (exposure-response)

# Chronic Solvent-induced Encefalopathy

## referrals and cases 1997-2013



## Work questions:

- Do other workers have similar symptoms?  
(strenght of association)
  - Clusters have been the first signs of occupational diseases / cluster investigations end generally negative
  - Similar illness in a fellow workman:
    - absence does not exclude causality (individual vulnerability / rare diseases)
- What other exposures/ causal factors could be responsible for the same symptoms? (specificity)

# Listing Occupational Diseases

- National Lists of OD's
- EU-list of OD's
- ILO-list of OD's
- ICD-11 and OD's

Kim and Kang *Annals of Occupational and Environmental Medicine* 2013, **25**:14  
<http://www.aoemj.com/content/25/1/14>



ANNALS OF OCCUPATIONAL  
AND ENVIRONMENTAL MEDICINE

REVIEW

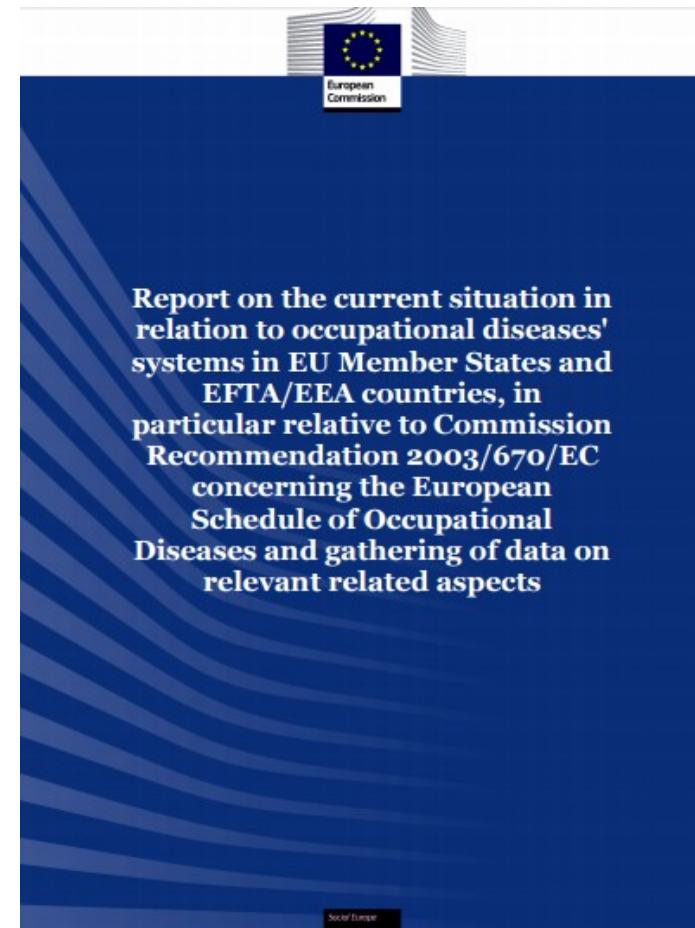
Open Access

Historical review of the List of Occupational Diseases recommended by the International Labour organization (ILO)

Eun-A Kim<sup>1\*</sup> and Seong-Kyu Kang<sup>2</sup>

15/12/2016

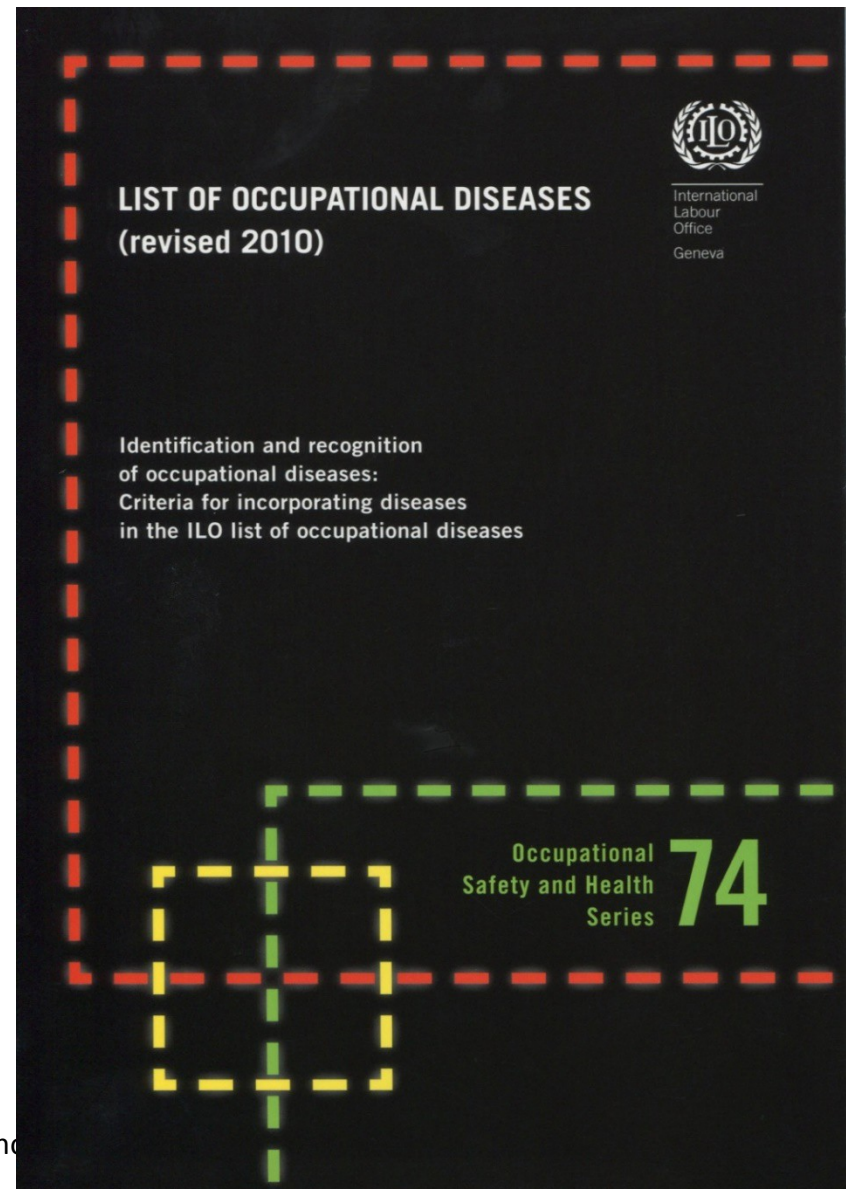
Name of the author: Ruben





# EU List of Occupational Diseases

- **Recommendation** concerning a European Schedule of Occupational Diseases 1962, with adaptations in 1990 and 2003 (Recommendation 2003/670/EC):
  - ✦ *Recognition, improved statistics*
  - ✦ *Preventive measures*
  - ✦ *Compensation*
- **Two Annexes:**
  - ✦ *European Schedule of Occupational Diseases*
  - ✦ *List of diseases suspected of being occupational in origine*
- **Supporting Documents:**
  - ✦ *Information Notices on OD's (2009)*



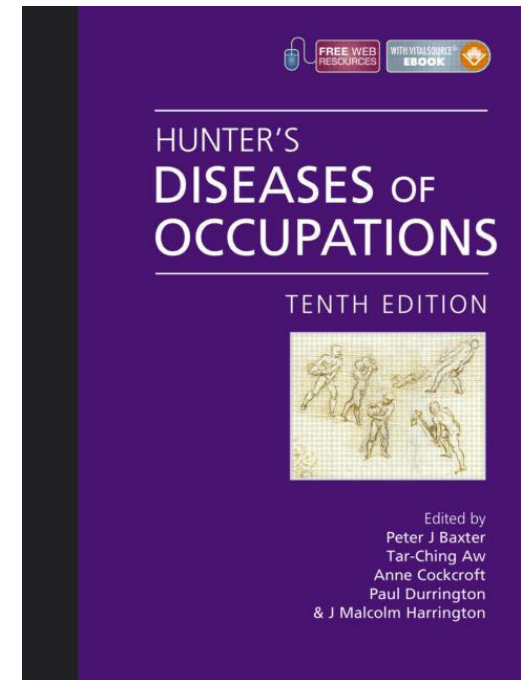
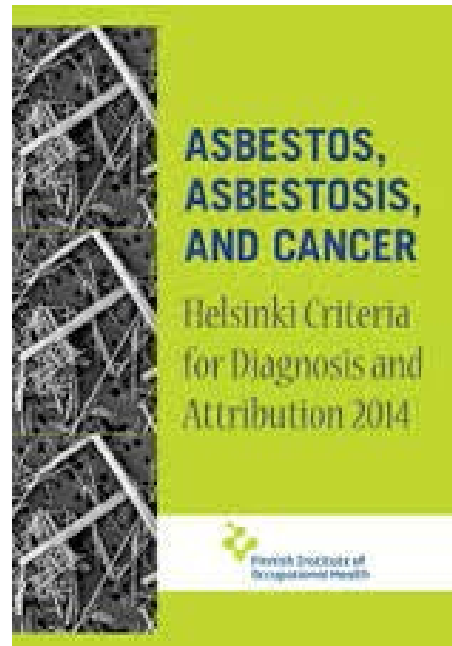


# Occupational/Work-related Diseases

## Books, Guides Criteria



Information notices on occupational  
diseases: a guide to diagnosis



# Essentials of Occupational Diseases



**Diagnosis of Occupational Diseases** can be complex  
assessment through 6-step approach

**Medical Diagnosis + Occupational History** are two essential elements in the  
assessment

**Classification** of Occupational Diseases is based on the combination of medical  
diagnosis + occupational exposure

The use of **Lists of Occupational Diseases** is helpfull in the Recognition,  
Compensation and Prevention

The ILO List of Occupational Diseases is a little broader than the European List of  
Occupational Diseases