National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport

Protecting workers from hazardous substances

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Who am I?

› Background in Chemical Engineering

› Management of Safety, Health and Environment

› Dutch Labour Inspectorate

› National Institute of Public Health and the Environment

   o Centre for Safety of Substances and Products, focussing on workplace safety

   o Advice to Ministry of Social Affairs and Employment

   o Main topics: REACH, asbestos, OELs

What makes a substance dangerous?

› Hazardous properties

    o   Acute effects: toxicity, corrosion, STOT-SE

    o   Long term effects: CMR, STOT-RE

    o   Sensitization

› Conditions (temperature, pressure)

› Form (e.g. small particle size)

Hazardous substances/mixtures

› Labeled products:
acids, bases, organic solvents, paints, cleaning agents …

› Substances that are formed in the workplace:
by-products, welding fumes, diesel exhaust,
(hard)wood dust, silica dust, …

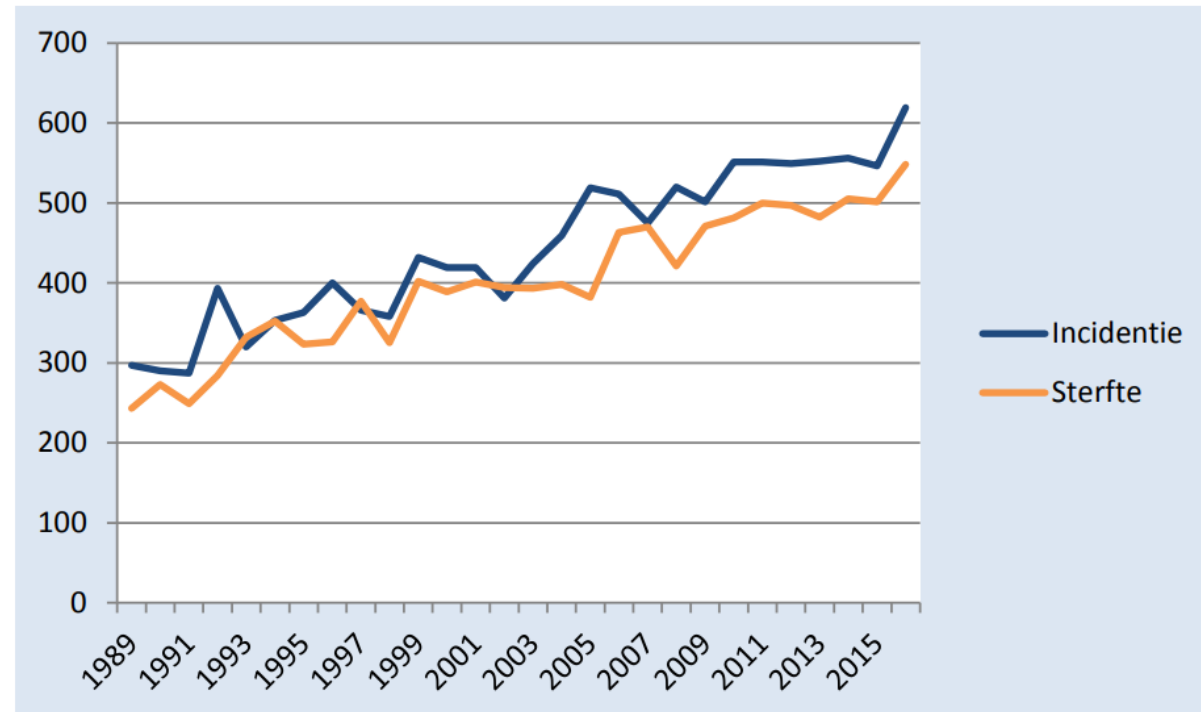› 'Natural' substances:
toxins, minerals, oils, …

› Medicine

› Waste

Asbestos

› Causes mesothelioma, lung cancer and other types of cancer, asbestosis

› Long latency diseases

› Ban in 70 countries (NL: 1994)

› Fibres enter deep into lungs

› Effects known since 1960's

› Clear link mesothelioma-asbestos

Mesothelioma in the Netherlands 1989-2016

Eysink et al RIVM Report 2017-0194

(Hard)wood dust

› Irritation of skin, eyes, nose

› Sensitization/allergies

› Nasal cancer, lung cancer

› Treated wood induces additional risks

Organic solvents

› Dizziness, nausea

› Skin, eye, lung irritation

› Some have CMR effects

› Psycho-organic syndrome

› Ototoxicity

› Drinking alcohol adds to effects

Information on substances

› MSDS (from supplier)
  Contains information on hazards, preventive measures, emergency measures, waste handling etc

› International Chemical Safety Cards (ILO)
  https://www.ilo.org/dyn/icsc/showcard.listCards3?p_lang=en
  Contain information on hazards, prevention, emergencies, OELs

› GESTIS substance database
  https://gestis-database.dguv.de/
  Contains information on physical/chemical properties, (eco)toxicology, health effects, safe handling, first aid, legal information

Information on substances – ECHA website

Homepage - https://echa.europa.eu/home

Substance infocard (search substance from ECHA homepage)

› Information on classification and labelling, registration and use

› Links to more extensive information:

- o Classification & Labelling database
  Harmonised classification and notifications

- o Registered substance database
  Information from registration dossier, including phys/chem properties, (eco)toxicology including DNEL derivation, uses, guidance on safe use

Worker protection – 4 steps

Before starting: take basic occupational hygiene measures

1. Inventory of substances and uses
2. Exposure assessment
3. Preventive measures
4. Education and assurance

Source: Netherlands Labour Inspectorate

1. Inventory of substances and uses

› Substances and mixtures used or in storage

› Substances and mixtures produced or formed in the workplace

› Hazard properties

› Information on use: processes, locations

› Use MSDS, information from workers

2. Exposure assessment

› Occupational exposure limits
  - GESTIS OEL database: https://limitvalue.ifa.dguv.de/
› Daily exposures and/or peak exposures
› Inhalatory and dermal exposure (dermal often qualitatively)
› Measurements or exposure modelling

3. Preventive measures

Hierarchy of controls - STOP principle:

› **S**ubstitution

› **T**echnical measures
e.g. closed system, ventilation

› **O**rganisational measures
e.g. job rotation, procedures

› **P**ersonal Protective Equipment
Selection of appropriate type is important

4. Education and assurance

› Worker education (hazards, safety precautions, correct use of equipment and PPE)

› Supervision

› Emergency preparedness

› Maintenance

› Regular re-assessment

Thank you for your attention!