



Netherlands Expertise Centre for Occupational Respiratory Disorders

IOHA 2015

# Managing risks for occupational allergies within the Dutch bakery industry

Remko Houba

Jos Rooijackers, Vanessa Zaat, Erik Stigter, Mischa Zengeni,  
Bernadette Aalders, Tineke Rens, Dick Heederik

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# Occupational allergies among bakery workers

- **Step 1: sensitization to occupational allergens**
  - Prevalence rates 5-25%
  - Incidence rates  $\approx$  6 per 1000 py
- **Step 2: development of occupational allergy**
  - Prevalence rates 5-15%
  - Incidence rates 2-3 per 1000 py
  - High exposed (doughmakers) 6-7 per 1000 py
- Many potential allergens involved, most important:
  - Flour (wheat, rye)
  - Enzymatic dough improvers (e.g. alpha-amylase)

# Occupational exposure limits

- Often treated as general dust: 10 mg/m<sup>3</sup> inhalable dust
- SCOEL:
  - No OEL; no threshold can be identified
  - Recommendation: < 1 mg/m<sup>3</sup>
- Dutch Health Council:
  - 0,12 mg/m<sup>3</sup> (1% additional risk of occupational sensitization)
  - 1,2 mg/m<sup>3</sup> (10% additional risk of occupational sensitization)

2004

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## Wheat and other cereal flour dusts

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An approach for evaluating health effects from occupational exposure



2014

Health Council of the Netherlands

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## Fungal alpha-amylase (derived from the fungus *Aspergillus oryzae*)

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Health-based recommended occupational exposure limit

to:

the Minister of Social Affairs and Employment

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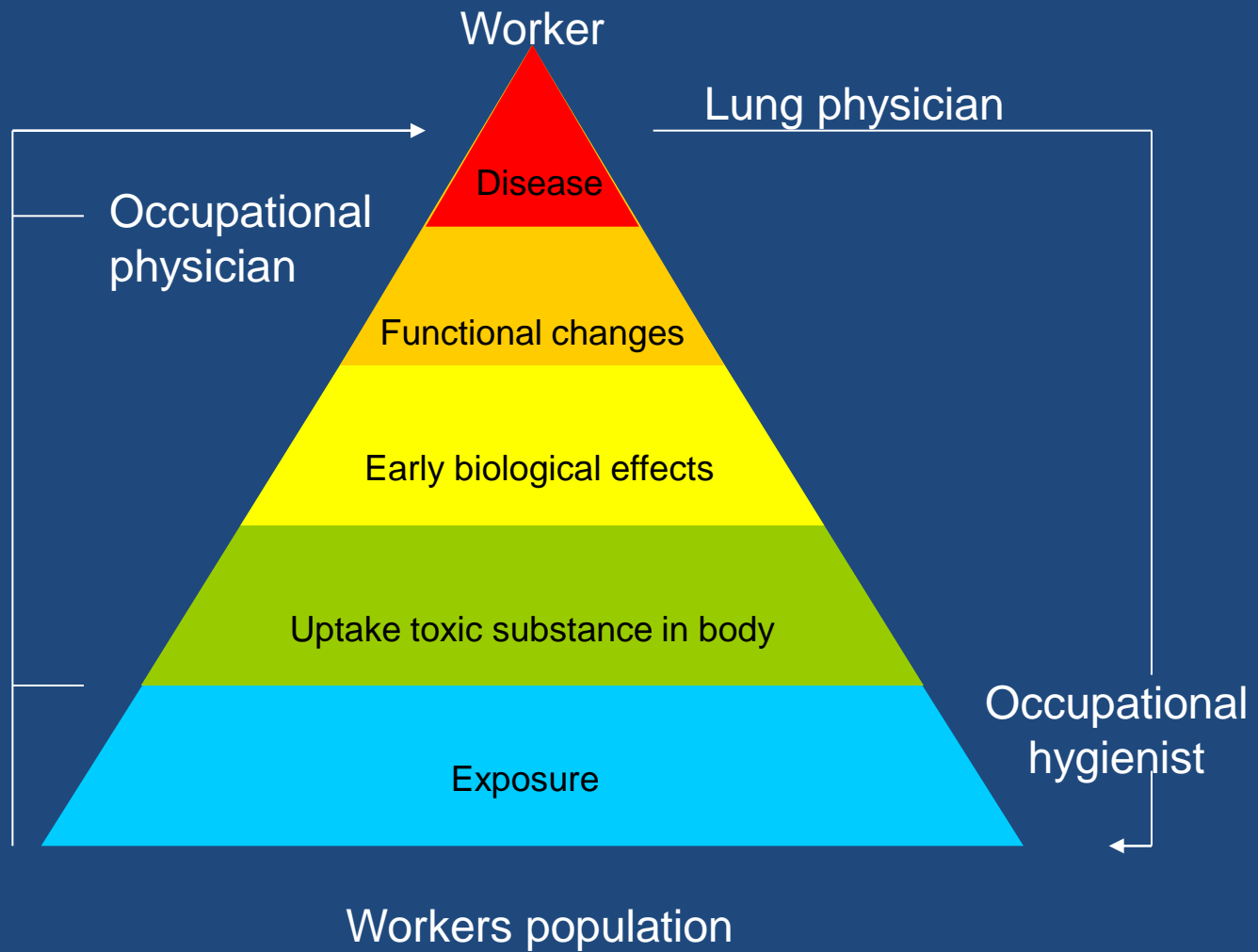
No. 2014/25, The Hague, November 6, 2014

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Tertiary prevention

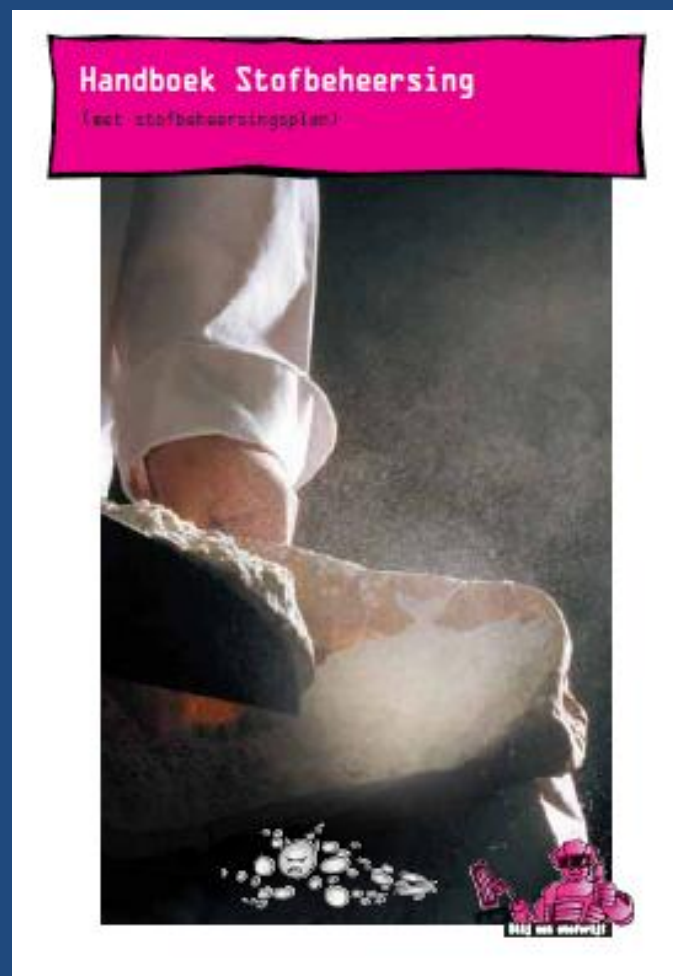
Secondary prevention

Primary prevention



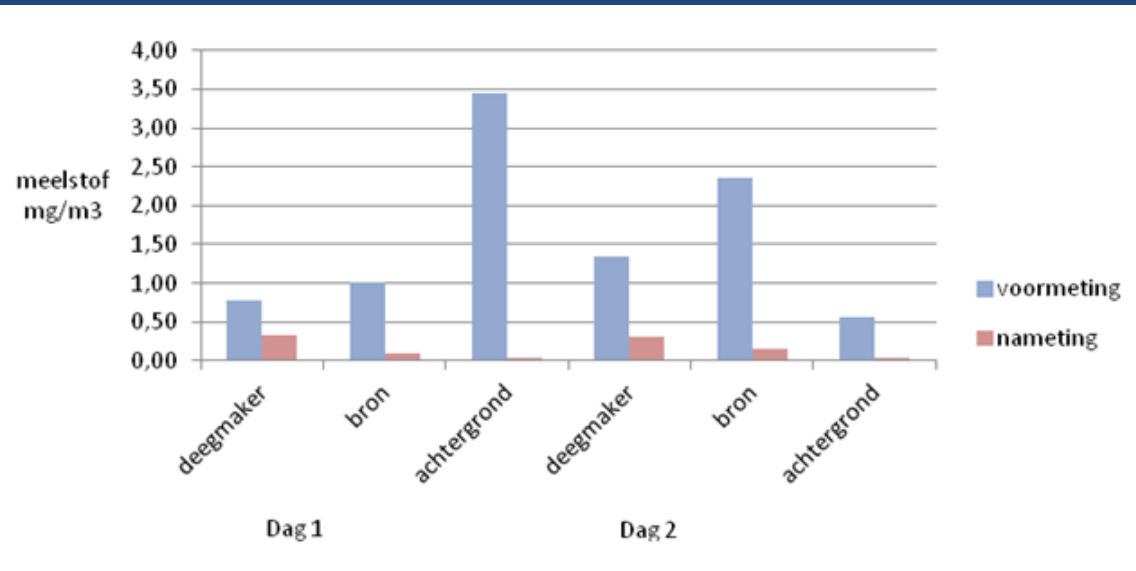
# Exposure reduction

- Good practice guide
  - Information on potential control measures
  - Work instructions
  - per type of activity
- Movies
  - Instruction movies
  - PIMEX images
  - <http://www.blijmetstofvrij.nl/stofbeheersing-in-beeld>



# Validation of good practices

- What does really work?
- What is amount of exposure reduction (% reduction)
- Estimates of the costs



68-76% reduction in full-shift exposure

Rens et al, 2015 (in preparation)

Primary prevention

Secondary prevention

Tertiary prevention

# Health surveillance program

- Initiative of bakery sector
  - employers & employee organisations
- Medical triage
  - Every bakery worker short questionnaire every 4 yrs
  - Based on questionnaire:
    - Prediction of probability of occupational sensitization

Low risk: no action; next questionnaire in 4 yrs

Medium risk: telephone consultation by occupational physician  
[based on this decision low or high risk]

High risk: referred to a specialized clinic

Suarthana E, e al. Am J Ind Med 2005; 48:168-74



# Health surveillance program

Real time statistics on internet:

- questionnaires sent
- response rate

Statistieken grondstofallergie

**8352**

vragenlijsten hebben we inmiddels verzonden

**65%**

doet mee met het onderzoek

- Referred to clinic: N=439

– Sensitization rates:

- 57.6 % wheat flour
- 38.4 % rye flour
- 9.6 % alpha-amylase

– Clinical diagnosis:

- 45.8 % occupational respiratory allergy
- 6.4 % occupational asthma
- 4.2 % occupational allergic dermatitis

# Back to work?



Not sensitized

Yes



Sensitized to occupational allergens

Yes



Occupational rhinitis

Yes, unless



Occupational asthma

No, unless

Individual  
medical  
advice and  
follow-up

Primary prevention

Secondary prevention

Tertiary prevention

# Not back to work

- Workplace investigation by industrial hygienist
- Any solution within the bakery?
- If not:
  - Help to get retrained to another profession
  - Professional support
  - Financial help
- The full program of health surveillance is paid by the bakery sector

# Summary and conclusions

- Occupational allergy still large problem within bakery industry
- Primary prevention possible by exposure reduction
  - No threshold limit
  - Lower exposure levels: reduced incidence but not likely to be zero
- Still a need for health surveillance
- Dutch bakery industry launched a full program
  - Primary, secondary and tertiary prevention
- Good example for other industries with risk of occupational allergy!

## Who are we?

**NKAL** Jos Rooyackers MD PhD, chest physician  
Remko Houba PhD, occupational hygienist  
Vanessa Zaat BSc, occupational hygienist  
Erik Stigter MD, occupational physician  
Bernadette Aalders, respiratory technologist  
Mischa Niederer BSc, respiratory technologist

**IRAS** Dick Heederik PhD, epidemiologist

## Where can you find us?

[www.nkal.nl](http://www.nkal.nl)  
[helpdesk@nkcal.nl](mailto:helpdesk@nkcal.nl)



Universiteit Utrecht - Institute for Risk Assessment Sciences



# Arbeidshygiëne – Arbeids- en Bedrijfs geneeskunde – Longziekten



## Epidemiologie - Geneeskunde

