

Prevention of hand eczema among hairdressers

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RESEARCH CENTRE
for Hairdressers & Beauticians



AGENDA

- Who am I?
- Who and what is the Research Center
- The skin, contact allergy and dermatitis
- The mechanism behind dermatitis and How to test for allergy
- Prevention
 - Gloves
- Artificial nails
- Legislation
- Educational material

WHO AM I?

- Ulrik Fischer Friis
- 2008
 - Graduated from DTU (Technical University of Denmark) in biotechnology
- 2010
 - The National Allergy Research Centre
- 2014
 - PhD – occupational contact allergy
 - Research Center for Hairdresser and Beauticians
 - Department of Dermatology and Allergy



WHO AND WHAT IS THE RESEARCH CENTER

- It was established in 2006
 - A cooperation between the union, the hairdresser association and the National Research Centre
- We participate;
 - In the development of a better occupational work environment
 - In the prevention of occupational injuries especially skin- and respiratory diseases
 - In counseling of hairdresser and beauticians, upgrading the educational materials
 - Teaching apprentices and hairdressing teachers

WHO AND WHAT IS THE RESEARCH CENTER



Jeanne Duus Johansen,
Dr.med, Professor



Ulrik Friis,
cand.polyt., Ph.d.



Majken Hougaard,
MD, Ph.d.-student



Sanne Skovvang Steengaard
Cand.scient., Phd-student



Anne Marie Topp
Nurse, Research nurse

OUR WEBSITE

HTTP://WWW.VIDENCENTERFORFRISORER.DK/



VIDENCENTER
for frisører og kosmetikere

Allergi og eksem ▾ Forebyggelse ▾ Forskningsprojekter ▾ For Kosmetikere ▾ Om Videncenteret ▾

Ekshåndeksem et problem?

Forside
Om de
Løvgiv
indhol

Velkommen til Videncenter for Frisører og Kosmetikere!

Her på siden vil du kunne finde information om:

- Allergifremkaldende stoffer i frisørfaget,
- Hvilke handsker Videncenteret anbefaler,
- Hvilke forholdsregler vi råder frisører til,
- Hvilken forskningsprojekter der arbejdes på og
- Generel information om beskyttelse i frisørfaget

Under fanen "**Allergi og Eksem**" vil du blandt andet kunne finde informationer om *allergi, hyppige spørgsmål fra frisører og frisørelever og fokus på kemi.*

Nyheder

Nyheder fra 2015
Oktober:
[Vejledning til ventilation i frisørsaloner](#)

Oktober:
[Endnu en neglelim tilbagekaldes pga fund af høje koncentrationer af chloroform](#)

September:
[Frisør? – se her og tjen lidt ekstra](#)

THE SKIN, CONTACT ALLERGY AND DERMATITIS

THE GOAL/DREAM



- Because of



leaves the
years (incl 4years



We ne



HAIRDRESSER – A HIGH RISK OCCUPATION

There is a high risk for developing hand dermatitis

Table 2. The overall incidence rate per 10,000 workers per year

Hairdressers and barbers	97.4
Bakers	33.2
Florists	23.9
Pastry cooks	20.6
Tile setters and terrazzo workers	19.0
Electroplaters	13.3
Solderers	10.9
Dental technicians	10.8
Machinists	9.0
Metal-surface processors	9.0

Dickel et al. 2001

30% of all hairdresser reports ever having hand dermatitis

Lind ML et al. 2006



Gentofte
Hospital

RESEARCH CENTRE
for Hairdressers & Beauticians

WHAT IS ALLERGY AND HOW DO WE TEST FOR ALLERGY

- Irritative contact dermatitis
 - Main reasons
 - Wet work for more than 2 h/day
 - Improper use of gloves
- Allergic contact dermatitis
 - Main reasons
 - Direct skin contact to allergenic substances



DERMATITIS CAN LOOK LIKE THIS

- Redness
- Flaky skin
- Fissures
- Blisters
- Swelling
- Itchiness



TIME OF DEBUT OF HAND DERMATITIS FOR A HAIRDRESSER

A Swedish survey asking 5034 hairdressers, educated from 1970-1995

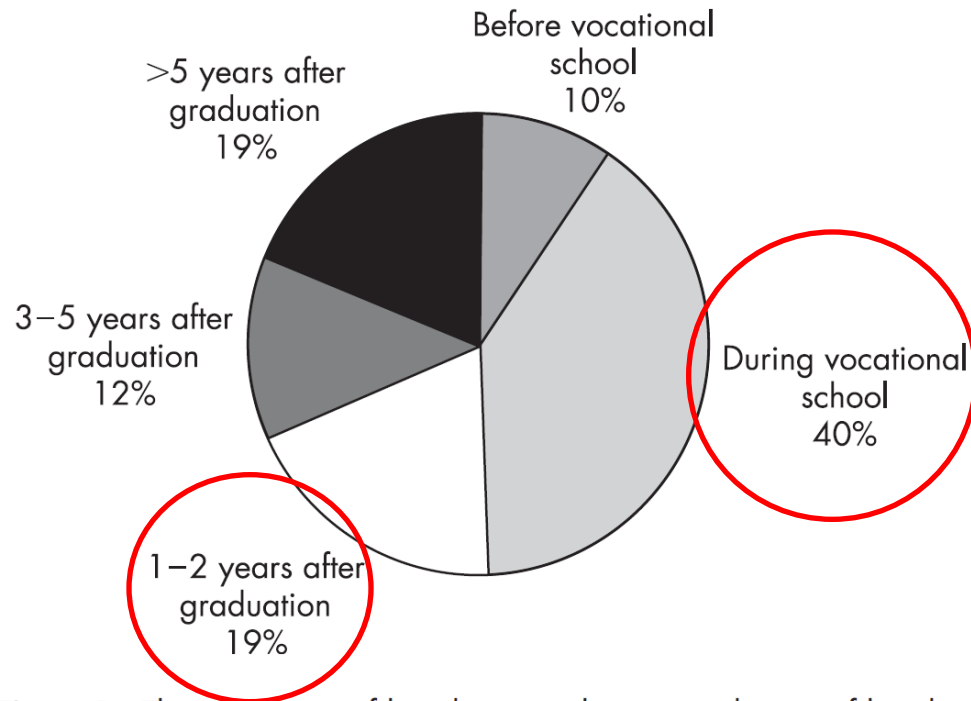
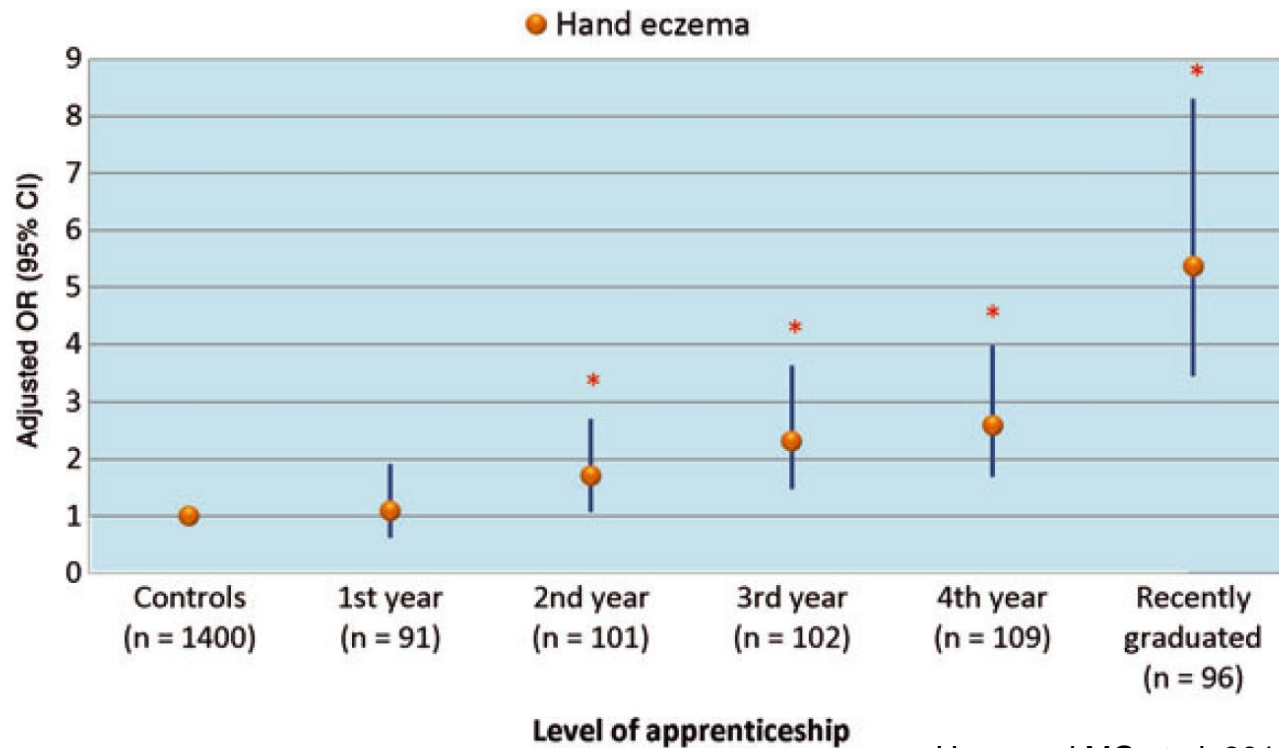


Figure 1 The proportion of hairdressers who reported onset of hand eczema during different time periods.

Lind ML et al. 2006

THE DEVELOPMENT OF DERMATITIS IN HAIRDRESSING APPRENTICES

- A Danish survey
- 504 hairdressing apprentices and 1400 controls



HAIRDRESSERS WHO STOPS IN THE OCCUPATION

- A hairdresser who stops in the occupation, has only been there for 8.4 year
- This is including the 4 years they studying



Lysdal SH et al. 2011

This means that they only is in the marked for 4.4 years
mean reasons:

- Musculoskeletal pain
- Dermatitis/Allergy



A HAIRDRESSERS WET WORK

A Danish survey

5324 hairdresser – educated from 1985-2007

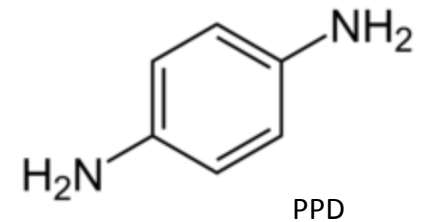
Table 2. Description of the occurrence of potential risk factors for hand eczema among 2918 trained hairdressers (125 men and 2793 women) who answered a postal questionnaire

	Male hairdressers Total (%)	Female hairdressers Total (%)	All hairdressers Total (%)
Wet hands			
Question: On any normal day at work: for how long are your hands wet? Include cutting of wet hair, washing hair, washing dishes, cleaning in the salon, etc. Please tick one box only	n = 125 (100)	n = 2771 (100)	n = 2896 (100)
Never	0 (0)	3 (0.1)	3 (0.1)
Less than half an hour a day	10 (8.0)	55 (2.0)	65 (2.2)
½–1 hr a day	8 (6.4)	111 (4.0)	119 (4.1)
More than 1 hr but less than 2 hr a day	9 (7.2)	194 (7.0)	203 (7.0)
2–3 hr a day	21 (16.8)	464 (16.7)	485 (16.8)
More than 3 hr but less than 4 hr a day	25 (20.0)	431 (15.6)	456 (15.8)
4 hr or more a day	52 (41.6)	1513 (54.6)	1565 (54.0)

Lysdal SH et al. 2012

CHEMICAL WORK ENVIRONMENT

- Possible contact to allergenic substances
 - Hair dye: PPD and resorcinol
 - Bleaching agents: Persulfates
 - Metals: Nickel
 - Preservatives
 - Gloves: latex and rubber chemicals
 - Perfume
- Hair dye and bleaching agents, the two most common work related allergens in hairdressers (10% of all tested hairdressers)



EXPOSURE WHEN HAIR DYING

- A Swedish survey of hairdressers exposure to hair dye
- 11 hairdressing salons, 20 hairdressers.
 - 15 hair dyeing: hair dye, replenishing, staining, leaching and cutting
 - 10 whole head coloring: only samples before and after cuttingIn total 220 samples
- Resorcinol was the chosen marker
- Resorcinol – max cons. 1.25% in the end product under oxidative conditions in the hair
- PPD – max cons. 2% in the end product under oxidative conditions in the hair

Slutrapport AFA projekt, Dnr 070103 Lind ML 2013

Cosmetic regulations

RESULTS

- Largest exposure was when cutting after coloring



Hand wash	Before cutting		After cutting	
Hand	Not dominant	dominant	Not dominant	dominant
Amount (nmol/probe) average (range)	72 (0-228)	78 (0-218)	205 (61-547)	55 (15-104)
Number of positive probes	9	9	10	10

Slutrapport AFA projekt, Dnr 070103 Lind ML 2013

Place	Number of probes	Number of positive	Amount (nmol/cm ²) average (range)
Bowl handle	7	1	0,49
Wagon	7	3	0,36 (0,44-1,6)
Wave	1	1	0,8
Totalt	52	5	

Extract from the table – 7/11 salons was tested

- Recommendation: Cut before coloring

L'OREAL EXPERIMENT

Most of the hair dye was measured on the hands in the Cutting/styling phase, which normally carries out without gloves



HAIR DYEING

A Danish survey

5324 hairdressers – educated from 1985-2007

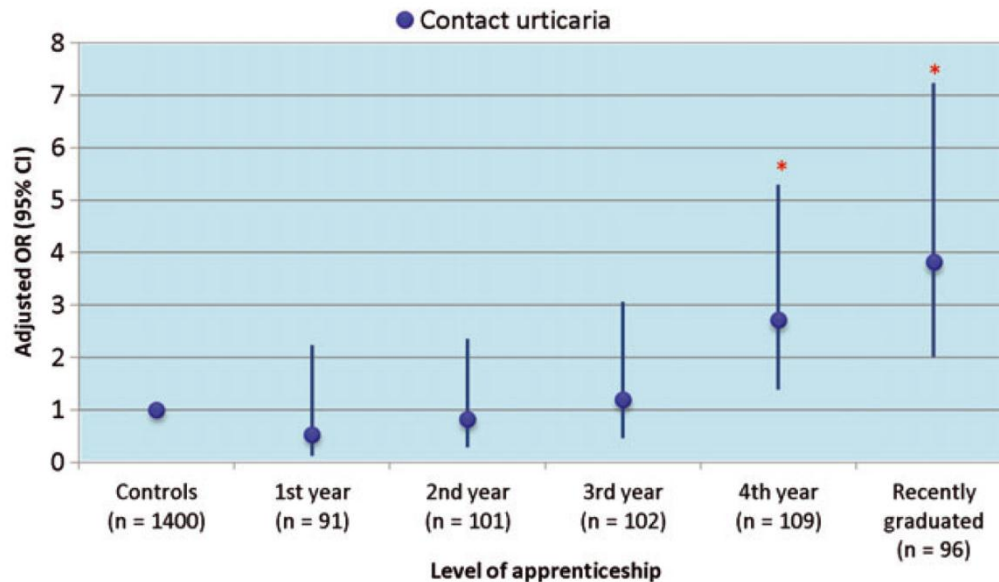


- Hairdressers color on a daily basis hair on costumers
- Approximately full coloring 9.3 times/week ~1,9 times/day

Lysdal SH et al. 2011

BLEACHING AGENTS - PERSULFATES

- Persulfates is known give:
 - Hives (contact urticaria)
 - Hay fever
 - Asthma
 - Eczema

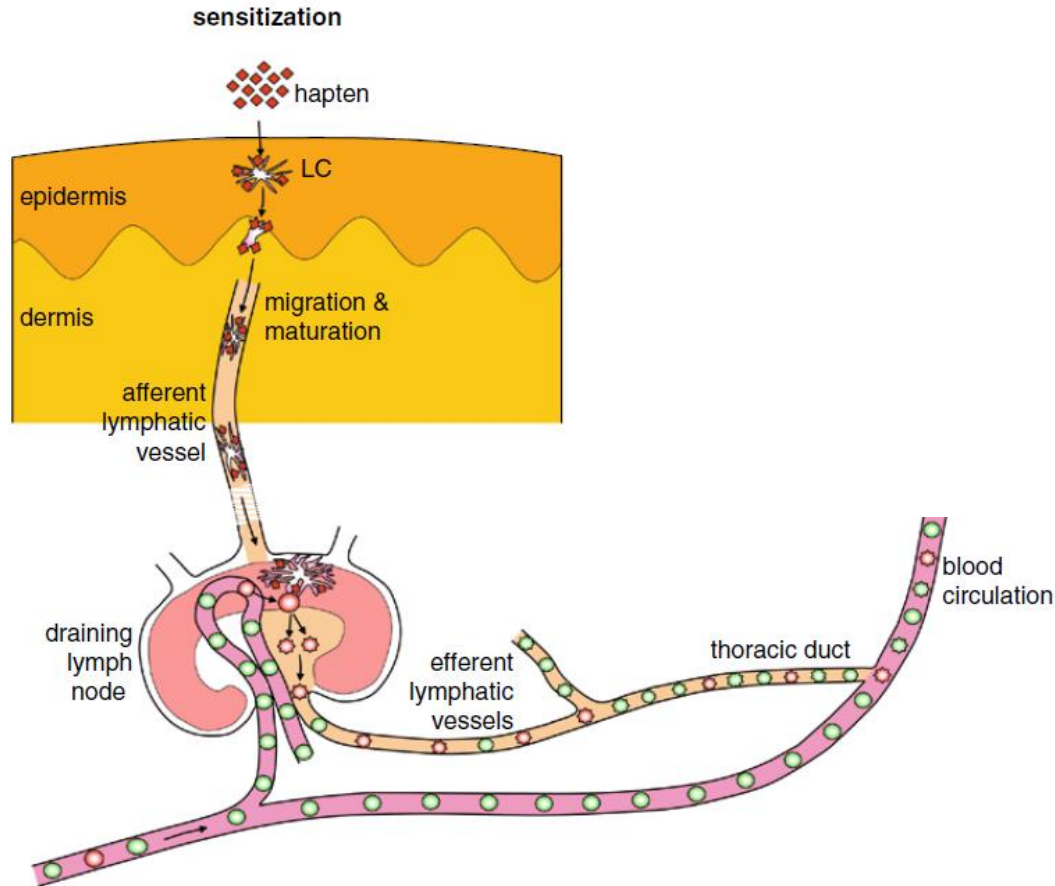


THE MECHANISM BEHIND DERMATITIS AND HOW TO TEST FOR ALLERGY

THE MECHANISM BEHIND IRRITATIV DERMATITIS



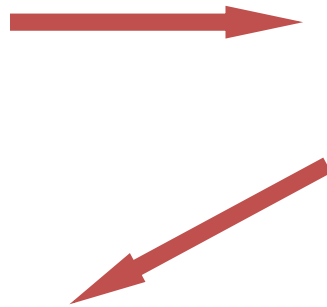
THE MECHANISM BEHIND ALLERGIC DERMATITIS



ALLERGY

- Type 1 – (*also respiratory allergy*):
 - Hay fever, asthma and urticaria
- Common causes: Pollen, dog, cat, dust mite and mold.
- Common causes among hairdressers: Latex used in gloves and persulfates in bleaching agents.

PRICK TEST



ALLERGI

- Type 4:
 - Contact allergy / dermatitis
 - Common causes: nickel, perfume, preservatives.
 - Common causes among hairdressers:
Hair dye - para-phenylenediamine (PPD), toluene-2,5-diamine, ammonium persulfate, ammonium thioglycolate og nickel.

PATCH TEST

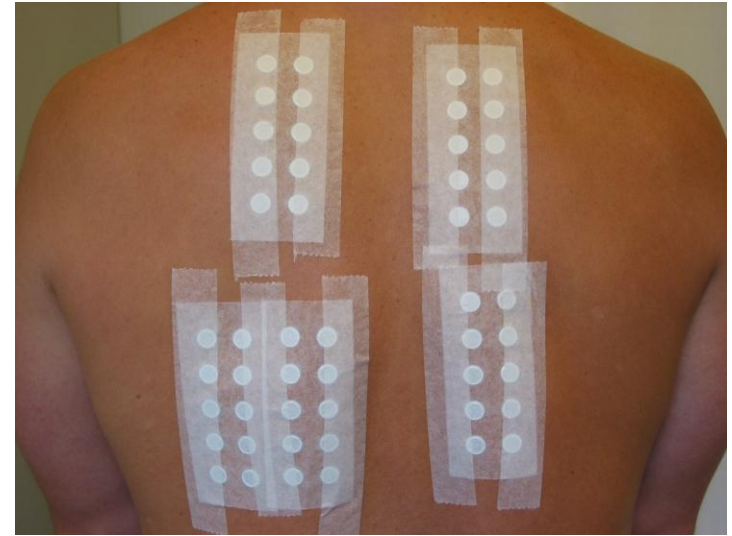
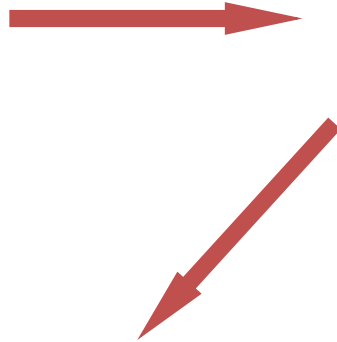


Foto: The National Allergy Research Centre

PREVENTION

- Gloves
- Lotion, moisturizing cream,
- Limited contact with allergens
- Good working routines
- Good advice for hairdressers

WHY USING GLOVES WHEN WASHING THE HAIR?

- Water
- Shampoo
- Sodium laureth sulfate
- Perfume
- Preservatives

- **Approximately half of all hairdressers with hand dermatitis got it because of wet work**

- That is why you have to use gloves when washing hair...

USE OF GLOVES

Research have shown that only a few uses them

- Those who uses them, do it wrong



- Wrong use of gloves:

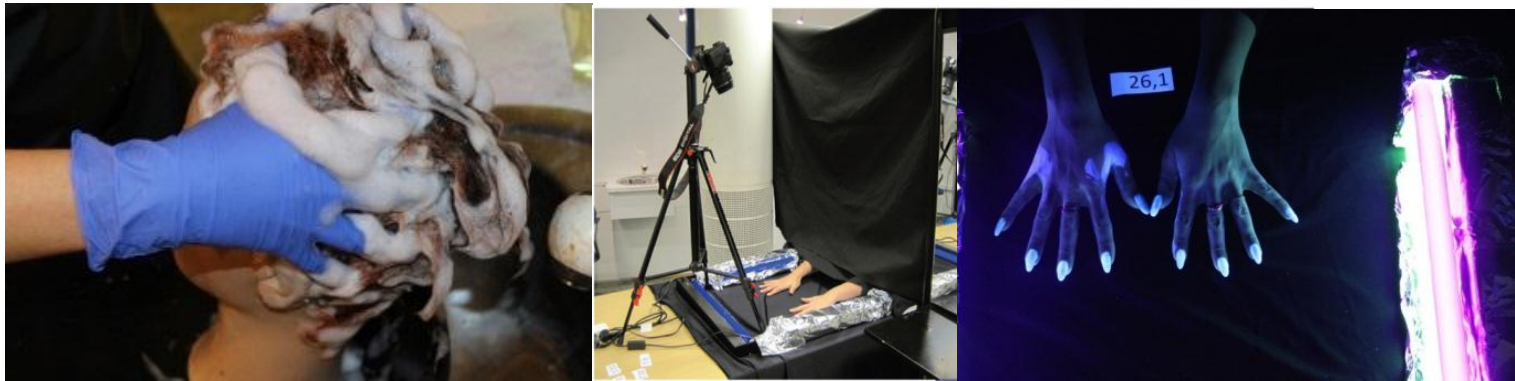
- 2818 hairdressers answered the question on gloves
- 569 (29.2%) did not use new disposable gloves every time
- 228 (8.1%) turned the gloves inside out and recycled the gloves

Lysdal SH et al. 2011

HOW TO REMOVE GLOVES CORRECT

Removing gloves is important

- 43 hairdresser/hairdressing apprentices washing hair on a manikin
- The shampoo contained a UV-fluorescent substance
- They were instructed how to remove the gloves
 - Before instruction 43/43 (100%)
 - After instruction 24/43 (55,8%)



- In the view of this, a video was produced

Oreskov K et al. 2015

HOW TO REMOVE GLOVES IN THE CORRECT WAY



<http://www.youtube.com/watch?v=6UyyIxEfj00>

USE OF GLOVES, IN THE CORRECT WAY

- Soap residue and dirt under the ring can give dermatitis
- Rings can reduce the gloves functionality
- This incl. also long nails



photo: Sundhedsstyrelsen

ARTIFICIAL NAILS



THE GLUE

- Some glue hardens under UV-light
 - Contain acrylates
 - It is important to use gloves and ventilation
- The problem is the acrylics that is not hardened
- This can give major problems/complications at the dentist.

LEGISLATION

- Cosmetic products
 - They are exempted the legislation about material safety data sheets
 - ALL ingredients must appear on the product, label, packaging or attached with a card
 - 26 perfume substances must be labeled on the list of ingredients
 - <http://www.kosmetikindhold.dk/>
- Work injury:
 - The Doctor reports the injury
 - It must be done just on suspicion that it is a work related dermatitis
- Ventilation should be used:
 - When working with hazardous and air troublesome substances

ON GOING PH.D.-STUDIES

- Majken Hougaard, Ph.d.-student
- Sanne Skovvang Steengaard, Ph.d.-student

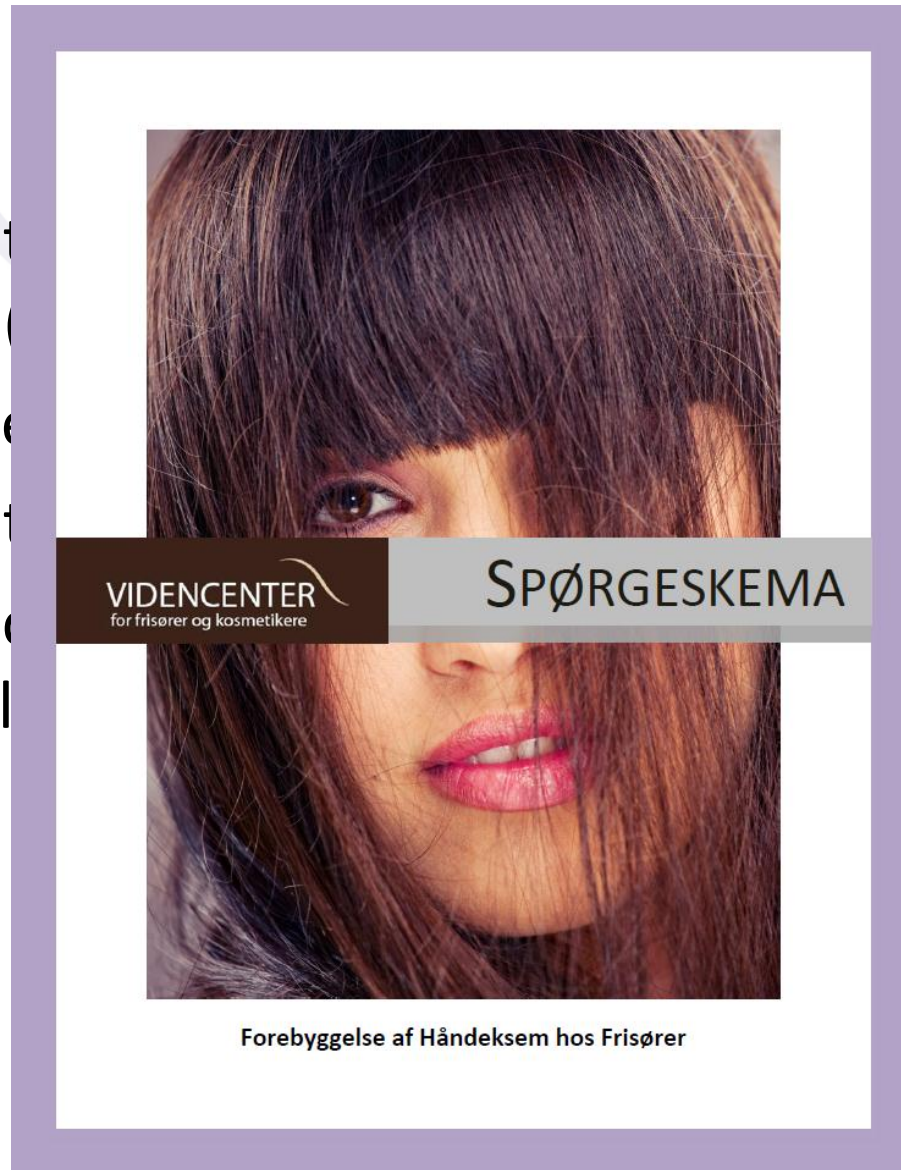
MAJKEN HOUGAARD

- Respiratory diseases in hairdressers, caused by persulfates
- Provocation in the exposure chamber



SANNE SKOVVANG STEENGAARD

- Development of hand eczema in hairdressers (T- and B-cell mediated)
- Strong allergic reaction to hair dyes
- Development of allergic contact dermatitis
- Characteristic of allergic contact dermatitis (T- and B-cell mediated)



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EDUCATIONAL MATERIAL

EDUCATION IN THE CHEMICAL WORK ENVIRONMENT

- A phd-study (2008-2010) showed that hairdressing apprentices, educated in chemical work environment had significant less eczema compared to a control group, who did not receive the same education
- In 2011 it got mandatory to teach after this education program, on all public hairdressing schools.
- This education material has just been updated.

Anne Bregnhøj et al. 2008

INFORMATION ON THE NEW EDUCATIONAL MATERIAL

- The material is divided into subjects
 - Fx skin, allergy and dermatitis
 - hair dyes

Uddannelsesmateriale er sidst opdateret d.8/4 2016.

POWERPOINTS TIL UNDERVISNINGSBRUG

Grundlæggende viden

- [Huden, allergi og eksem](#)
- [Videncenter for Frisører og Kosmetikere, hjemmeside mm](#)

Værnemidler

- [Brug af handsker i frisør- og kosmetikerfaget](#)
- [Ventilation](#)

Ingredienser i forskellige produkttyper

- [Hårfarver](#)
- [Afblegnings-/lysningsprodukter](#)
- [Permanentvæsker](#)
- [Midlertidige-, Semi- og permanente tatoveringer](#)
- [Kunstige negle \(acrylater\)](#)

Hand outs til eleverne (powerpoint):

[72 allergienkemiløende parfumesøfter er blevet undersøgt af Miljøstyrelsen](#)

Marts:

[Undervisning af frisører har god effekt](#)

Februar:

[Temadag om allergi overfor kemiske stoffer med fokus på huden](#)

Nyheder fra 2015

December:

[Test din viden med de 2 nye online test; Quiz og Kryds&Tværs](#)

November:

[Deltag i forsknings projekt](#)

Oktober:

[Vejledning til ventilation i frisørsaloner](#)

Oktober:

NUMBER FROM THE NATIONAL BOARD OF INDUSTRIAL INJURIES IN DENMARK SHOWS A POSITIVE TREND

	Anmeldelsesdato											I alt
Frisørbranchen	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
	Antal	Antal	Antal	Antal	Antal	Antal	Antal	Antal	Antal	Antal	Antal	Antal
Hudsygdomme	59	68	110	106	113	136	129	118	104	110	81	1134
I alt	59	68	110	106	113	136	129	118	104	110	81	1134

- The trend probably due to the teaching in chemical working environment, that one should cut before coloring and the use of gloves

CONCLUSION

- Hairdressers have the highest risk of occupational dermatitis.
 - Developed early in their careers
- Prevention is possible through education
 - Use of gloves
 - Cutting before dyeing
 - Managing chemistry
- The number of notified hand dermatitis among hairdressers have fallen
 - But still a big problem?
- Proposal for new initiatives:
 - Education also of independent hairdressers and beauticians
 - Campaigns
 - Better regulation of allergenic substances in the work environment

THANKS FOR YOUR
ATTENTION

