



Informasjon til Sikkerhetsforum 15. 11. 2018

Når krav til sikkerhet blir helseskadelig. Om helsefarlig bruk av «anti-impact gloves»

www.ptil.no/sikkerhetsforum

Halvor Erikstein

organisasjonssekretær

yrkeshygieniker SYH

SAFE

www.safe.no

Skal beskytte hånd og
fingre mot:

- ☐ Klemaskader
- ☐ Slagskader
- ☐ Kuttskader
- ☐ men, kan
ødelegge
huden!

- Et kutt og en klemskade kan føre til en omfattende granskning, inndragning av skarpt verktøy og endring av hanskebruk.
- Tiltakene som settes kan eksempelvis være krav om bruk av «anti-impact gloves», men det uten at konsekvensene av slike tiltak blir vurdert.



Hudproblemer og yrkessykdom som allergi, overfølsomhet og kontaktallergi blir ofte forbigått i stillhet. Hudallergi et alvorlige helseproblem og vil vare livet ut!



<http://www.britishskinfoundation.org.uk/SkinInformation/AtoZofSkindisease/ContactDermatitis.aspx>



<http://www.skinallergies.com.au/skin-allergy-info/273/are-you-allergic>



«Anti-impact gloves»

Kraftige polstrete hansker.

De er kostbare. De brukes lenge. De blir skitne.
I enkelte selskaper blir de vasket og gjenbrukt.



Hudopptak.

Huden slipper inn mye annet enn stoffer fra medisiner og nikotinplaster.



Ibux 50 mg/g gel med mentol

Ibux gel med mentol har en smertelindrende, betennelsesdempende og kjølede effekt. Gelen smøres direkte på det smertefulle området, og virkestoffet ibuprofen trenger ned i huden der det gjør vondt. Gelen inneholder i tillegg mentol som kjøler og bidrar til smertelindring i området.



Huden er ikke tett

Anmerkninger til grenseverdien for enkelte stoffer

I listen over grenser for kjemisk eksponering i vedlegg 1 i forskrift om tiltaks- og grenseverdier har enkelte stoff i tillegg til en tallverdi fått ulike anmerkninger.

Anmerkningene er knyttet til stoffenes ulike spesielle og helsefarlige egenskaper. Disse er ikke basert på stoffenes klassifisering i henhold til CLP, men stoffene er gitt en anmerkning fordi det foreligger vitenskapelige data som gir holdepunkter for de angitte egenskapene til det enkelte stoff. Det er også anmerket i listen om det er fastsatt korttidsverdi (S), takverdi (T) og bindende grenseverdi (G) for stoffene.

Anmerkning A: Allergifremkallende eller annen overfølsomhet



Anmerkning E: Veiledende grenseverdi i EU



Anmerkning G: Bindende grenseverdi



Anmerkning H: Hudopptak



Stoffer som kan tas opp gjennom huden, er merket med H.

En del av stoffene kan i stor grad trenge gjennom huden, selv om den er uskadet, og således tas opp i kroppen. Spesielt gjelder dette væsker og konsentrerte gasser, men også enkelte faste stoffer kan gi et betydelig hudopptak. En del stoffer skader huden ved direkte kontakt, men tas ikke opp gjennom huden (eks. lut, syrer osv.). Disse stoffene er *ikke* merket med H.

Anmerkning K: Kreftfremkallende



Anmerkning M: Mutagene



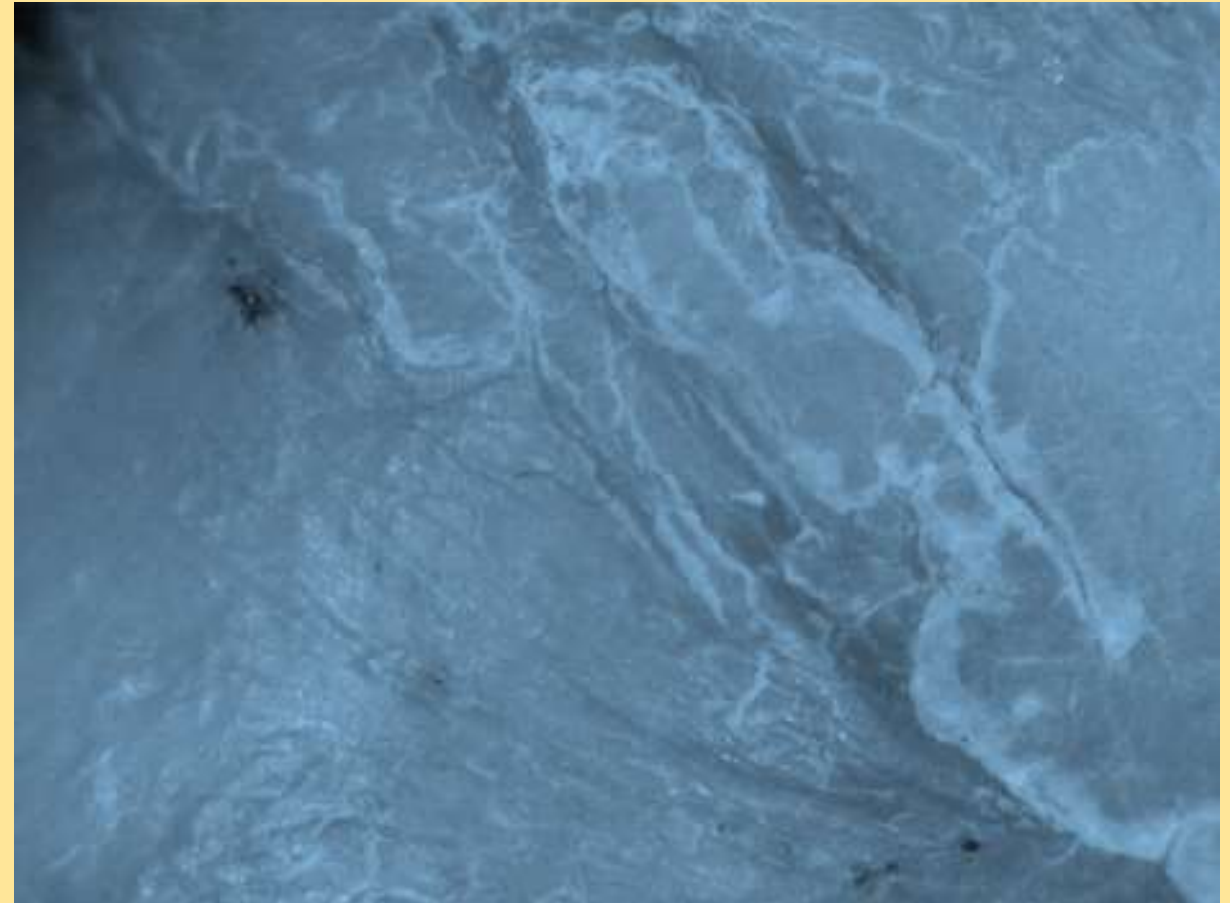
Anmerkning R: Reproduksjonstoksiske



Anmerkning S: Korttidsverdi



Anmerkning T: Takverdi



Hudopptak

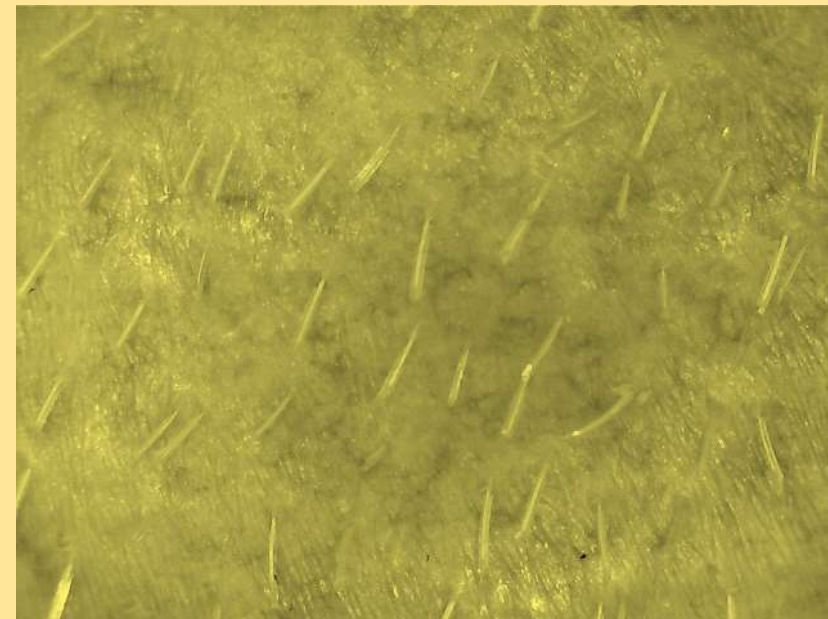
Faktorer som påvirker hudopptak

Ren og tørr hud gir mindre hudopptak enn avfettet og tynnskrubbet hud.

Svette og varme øker hudopptaket.

Kommer det kjemikalier inn i hanskene, kan varmen og fuktigheten femdoble hudopptaket.

Bruk aldri hanskene flere ganger om du ikke er absolutt sikker på at hendene er rene.

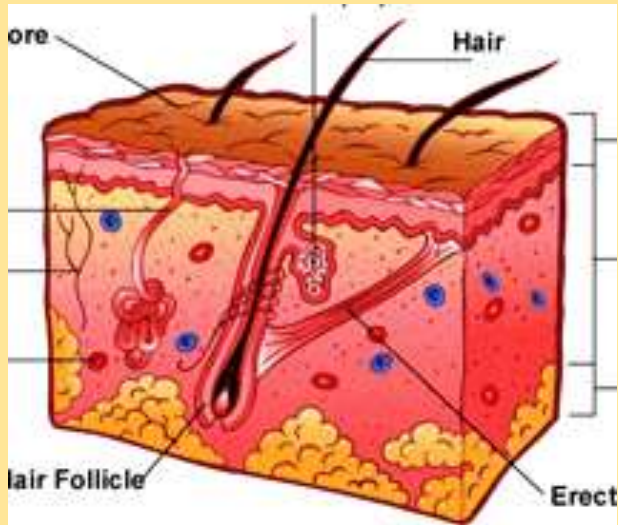


Rydd opp - Hudopptak av kjemikalier OFSA 2001 #6 Side 27 – 28

<https://www.safemagasinet.no/wp-content/uploads/2016/05/SAFE-Magasinet-2001-Nr-06.pdf>

<https://www.ishn.com/articles/83242-under-your-skin>

Eksempel på hudopptak



- Styren brukes i framstilling av polyester og er det som gir den karakteristiske plastlukten (polyester).
- Styren på hud fører til et kraftig hudopptak og vil gi et veldig stort bidrag til den totale kjemiske belastningen.
- *En teskje (3 milliliter) styren sølt på huden kan gi samme dose som å puste 8 timer i luft med en forurensing på 50 ppm.
 - Grenseverdi for styren er 25 ppm.

Forurensning fra overflater vil smitte over til hanskene og videre inn til huden

- En del av stoffene kan i stor grad trenge gjennom huden selv om denne er uskadet.
- Spesielt gjelder dette væsker og konsentrerte gasser, men også enkelte faste stoffer kan gi et betydelig hudopptak.
- Grenseverdien for disse stoffene kan bare brukes som vurderingsgrunnlag dersom huden er beskyttet mot opptak.
- Stoffer som kan tas opp gjennom huden er merket med H.
- Opptaket gjennom huden er avhengig av mange faktorer, f.eks. hudens beskaffenhet (våt, tørr, sår osv.) eller tilstedeværelsen av andre stoffer.



Metallallergi – nikkel – krom – kobolt ...

- Sliping og brenning på metall gir metallstøv som vil inneholde nikkel, krom og ulike metallegeringer
- Kommer dette støv inn i en fuktig og varm hanske er det skapt et miljø som er alvorlig allergifremkallende



<https://www.lhl.no/lhl-astma-og-allergi/allergi/nikkelallergi/>

<http://www.naaf.no/AllergivitenSite/Eksem/Vanlige-kontaktallergener/>

<https://www.ceraroot.com/download/contact-allergy-to-metals.pdf>

<http://robovent-eu.com/transportation/>

NIOSH. Det amerikanske instituttet for arbeidsmiljø og sikkerhet.

 Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

All A-Z Topics

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All CDC

The National Institute for Occupational Safety and Health (NIOSH)

Workplace Safety & Health Topics



 Workplace Safety & Health Topics

 Promoting productive workplaces through safety and health research

Skin Exposures and Effects

Recommendations and Resources

Skin Conferences

Ongoing Skin Research

Skin Notation (SK) Profiles

Skin Permeation Calculator

Finite Dose Skin Permeation Calculator

Occupational Dermatoses Program for Physicians

Related Topics

[Bloodborne Infectious Disease](#)

[Glutaraldehyde](#)

[Health Hazard Evaluations \(HHEs\)](#)

[Latex Allergy](#)

[Protective Clothing](#)

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SKIN EXPOSURES & EFFECTS

Overview

It is estimated that more than 13 million workers in the United States are potentially exposed to chemicals that can be absorbed through the skin. Dermal exposure to hazardous agents can result in a variety of occupational diseases and disorders, including occupational skin diseases (OSD) and systemic toxicity. Historically, efforts to control workplace exposures to hazardous agents have focused on inhalation rather than skin exposures. As a result, assessment strategies and methods are well developed for evaluating inhalation exposures in the workplace; standardized methods are currently lacking for measuring and assessing skin exposures.

Skin Notation (SK) Profiles

NIOSH has developed a strategy for assigning multiple [skin notations \(SK\)](#) capable of delineating between the systemic, direct and immune-mediated effects caused by dermal contact with chemicals.



OSD are the second most common type of occupational disease and can occur in several different forms including:

- Irritant contact dermatitis,
- Allergic contact dermatitis,
- Skin cancers,

On This Page

[Occupations at Risk](#)

[Anatomy and Functions of the Skin](#)

[Skin Hazards](#)

[Dermal Absorption](#)

[Contact Dermatitis](#)

<https://www.cdc.gov/niosh/topics/skin/default.html>

Ulike måter kjemiske forbindelser passerer hudbarrieren

Skin Hazards



Causes of OSD include chemical agents, mechanical trauma, physical agents, and biological agents.

- **Chemical agents** are the main cause of occupational skin diseases and disorders. These agents are divided into two types: primary irritants and sensitizers. Primary or direct irritants act directly on the skin through chemical reactions. Sensitizers may not cause immediate skin reactions, but repeated exposure can result in allergic reactions.
 - A worker's skin may be exposed to hazardous chemicals through:
 - direct contact with contaminated surfaces,
 - deposition of aerosols,
 - immersion, or
 - splashes.
- **Physical agents** such as extreme temperatures (hot or cold) and radiation (UV/solar radiation).
- **Mechanical trauma** includes friction, pressure, abrasions, lacerations and contusions (scrapes, cuts and bruises).
- **Biological agents** include parasites, microorganisms, plants and other animal materials.

Dermal Absorption

Dermal absorption is the transport of a chemical from the outer surface of the skin both into the skin and into the body. Studies show that absorption of chemicals through the skin can occur without being noticed by the worker, and in some cases, may represent the most significant exposure pathway. Many commonly used chemicals in the workplace could potentially result in systemic toxicity if they penetrate through the skin (i.e. pesticides, organic solvents). These chemicals enter the blood stream and cause health problems away from the site of entry.

The rate of dermal absorption depends largely on the outer layer of the skin called the *stratum corneum* (SC). The SC serves an important barrier function by keeping molecules from passing into and out of the skin, thus protecting the lower layers of skin. The extent of absorption is dependent on the following factors:

- Skin integrity (damaged vs. intact)
- Location of exposure (thickness and water content of stratum corneum; skin temperature)
- Physical and chemical properties of the hazardous substance
- Concentration of a chemical on the skin surface
- Duration of exposure
- The surface area of skin exposed to a hazardous substance

Research has revealed that skin absorption occurs via diffusion, the process whereby molecules spread from areas of high concentration to areas of low concentration. Three mechanisms by which chemicals diffuse into the skin have been proposed:

1. Intercellular lipid pathway (Figure 1)
2. Transcellular permeation (Figure 2)
3. Through the appendages (Figure 3)

<https://www.cdc.gov/niosh/topics/skin/default.html>

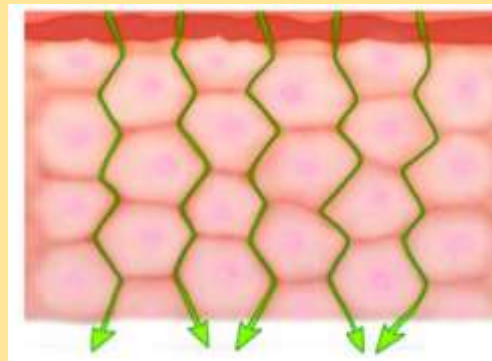


Figure 1: Intercellular lipid pathway

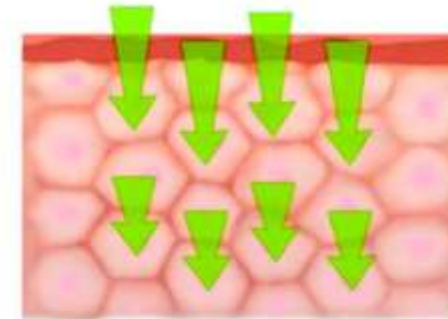


Figure 2: Transcellular permeation

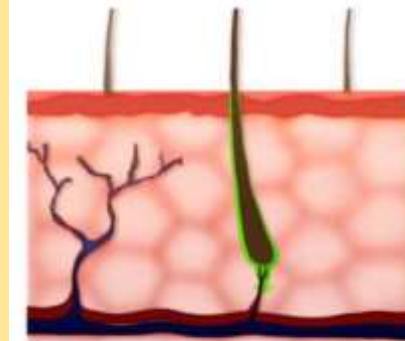


Figure 3: Through the appendages (hair follicles, glands)



http://eia-usa.org/images/downloads/EIA_2017_Presentations/eia_allergen.pdf

Hudkontakt med isocyanater kan føre til astma og hudsensibilisering. Isocyanater benyttes i svært mange produkter (polyuretan).



What happens when isocyanate gets on your skin?

In the past, doctors thought you had to breathe in isocyanates to develop isocyanate asthma, but it has recently been shown that in animals, skin exposure to isocyanate can “sensitize” the animals. That may turn out to be true for people too, so it is very important not to touch isocyanates. This can be difficult because even paint that is dry to the touch may still have the potential to “sensitize”, perhaps for as long as a month in some paints.



 Arbeidstilsynet

ArbeidsforholdHMSTemaRegelverkGodkjenningsregistre

Arbeidstilsynet > Tema > Kjemikalier > Isocyanater

Isocyanater

Isocyanater er en fellesbetegnelse på en gruppe kjemiske stoffer som brukes som bestanddel i polyuretanprodukter. Vanlige polyuretanprodukter er maling, lakk, lim, fugemasse, bygnings- og isolasjonsskum og skumgummi.

- Eksponering for isocyanater kan skje i forbindelse med arbeidsprosesser hvor polyuretanprodukter dannes, brukes eller varmes opp.
- Eksempler på arbeid med risiko for eksponering:
- Billakkering
- Overflatebehandling med plastholdig maling eller lakk
- Møbelproduksjon
- Sveising, lodding og skjæring av overflatebehandlet metall
- Produksjon og omarbeiding av uretanskumplast
- Herding av polyester, polyetre og epoxyharpikser
- Kjernelaging i støperi
- Brannslukking i hus, skip og biler.

<https://www.arbeidstilsynet.no/tema/kjemikalier/isocyantaer/>

Isocyanatholdige forbindelser benyttes i mye mer en to komponent maling

Who We Are - Worker Information - Shop Information - Manager Tools - Resources - Videos - FAQs

Worker Information

- Health Hazards
 - Isocyanates and Asthma
 - Solvents
 - Dusts and Metals
 - Other Autobody Exposures
 - Task Hazards Chart
 - Sources of Information MSDS

Isocyanate Health Hazards

Isocyanates can cause asthma and airway irritation...

<https://medicine.yale.edu/intmed/prep/worker/hazards/Isocyanate.aspx>



<http://www.nbcnews.com/feature/in-plain-sight/whats-making-these-selma-alabama-auto-parts-workers-so-sick-n150136>

Svært nyttig artikkel om hudopptak

DERMAL EXPOSURE TO CHEMICALS IN THE WORKPLACE: JUST HOW IMPORTANT IS SKIN ABSORPTION?

376

S Semple

Occup Environ Med 2004;61:376-382. doi: 10.1136/oem.2003.010645

The study of occupational and environmental exposure to chemicals has traditionally focussed on the quantity of dust, aerosol, or vapour inhaled. This has been driven by the high historic prevalence of respiratory illness among those in mining and manufacturing industries. The large proportion of respiratory physicians working in occupational medicine reflects this. Other exposure routes are often overlooked when evaluating the impact of chemicals on health. It is important to remember that in addition to inhalation, chemicals may enter the body by ingestion, by injection, or by uptake through the unbroken skin (dermal absorption).

Often dermal exposure is viewed purely in terms of percutaneous uptake of chemicals. There are however three types of chemical-skin interactions, and an understanding of these is required to characterise the nature of any dermal exposure taking place. Firstly, the chemical may pass through the skin and contribute to the systemic load. Alternatively, the chemical can induce local effects ranging from irritation through to burns or degradation of the barrier properties of the skin. Lastly, the chemical can evoke allergic skin reactions through complex immune system responses that can subsequently trigger responses in the skin at both the point of contact and at skin sites remote to the contact. There is also concern that skin contact may cause respiratory sensitisation. In any given exposure scenario there may be interactions between these modes of action. For example, a chemical can irritate the skin surface leading to increased percutaneous penetration of that, or other, chemicals. However, in each case the substance must diffuse through the outer layers of the skin before any adverse effect is possible.

This article aims to highlight the importance of the dermal exposure and absorption route in occupational settings, identify some of the factors that influence exposure and absorption, and describe methods currently used for the measurement and assessment of dermal exposure.

HOW IMPORTANT IS DERMAL EXPOSURE?

The ability of certain materials such as tetra-ethyl lead to enter the blood after contact with the skin has been well known for many years. However, much of the current understanding of dermal exposure and uptake has come from researchers investigating the health effects of pesticides. The importance of dermal exposure has been recently highlighted by a special edition of the journal

Table 2 Factors affecting the amount of chemical that is absorbed through the skin

Exposure factors

- Type of task
- Duration
- Area of skin exposed
- Use of protective clothing
- Concentration of the chemical
- Hygiene: washing and wearing of contaminated clothing

Chemical factors

- Molecular weight
- Solubility in water
- Solubility in oils
- Structure
- Irritancy
- Presence of other chemicals

Skin factors

- Skin thickness
- Skin type and condition
- Anatomical location of exposure
- Temperature and humidity
- Occlusion
- Skin perfusion
- Hairiness, pore density and sweating
- Skin metabolism

<https://oem.bmj.com/content/61/4/376>

Hudskadelig praksis – vasking av hansker gjør vondt verre

- Vasking av hansker vil gjøre at forurensningene vil bli fordelt i hanskene og lage et miljø som er enda mer hudskadelig.
- Vasking fjerner impregneringen og vil gjøre at de tar opp mer fuktighet.
- Det finnes ingen metode som kan rengjøre hansker som har vært benyttet i industrielt miljø!
- Etter vask vil hanskene være forurenset av en cocktail av alle mulig kjemiske forbindelser fra andre vaskeartikler.



Hansker som er vasket suger til seg fuktighet som et trekkpappir.
Etter vask vil de i tillegg være forurensset av de andre vaskeartiklene.
(Andre hansker, kjeledresser osv.)



Hvordan ser et hudproblem ut?

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HSE Health and Safety Executive

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Skin at work

- Employers, employees and trainees
- What are work-related skin diseases?
- Dermatitis**
- Urticaria
- Skin cancer
- Sun exposure
- Latex allergies
- How does exposure happen?
- How can they be prevented?
- High-risk jobs
- What does the law say?
- H&S and medical professionals
- Resources
- FAQs
- What's new

Dermatitis

What is dermatitis?

Dermatitis is a skin condition caused by contact with something that irritates the skin or causes an allergic reaction. It usually occurs where the irritant touches the skin, but not always.

What does it look like?

If you look at [pictures](#) of skin that has dermatitis, you could see one or all of these signs:

- Redness
- Weeping
- Scaling/flaking
- Cracking
- Blisters
- Swelling

What does it feel like?

Someone who has dermatitis may experience symptoms of itching and pain. The signs and symptoms of this condition can be so bad that the sufferer is unable to carry on at work. We have provided some [case studies](#) to give you the chance to see and hear real-life examples of dermatitis and how they were managed.

What causes irritant contact dermatitis?

It can occur quickly after contact with a strong irritant, or over a longer period from repeated contact with weaker irritants. Irritants can be chemical, biological, mechanical or physical. Repeated and prolonged contact with water (eg more than 20 hand washes or having wet hands for more than 2 hours per shift) can also cause irritant dermatitis.

What causes allergic contact dermatitis?

This can occur when the sufferer develops an allergy to a substance. Once someone is 'sensitised', it is likely to be permanent and any skin contact with that substance will cause allergic contact dermatitis. Often skin sensitizers are also irritants.

Resources

- [It's in your hands](#)
- [Skin checks for dermatitis](#)
- [Free poster](#)
- [Keep your top on: INDG 147](#)
- [More resources](#)

See also

- [BCOS Interact](#)
- [British Safety Council - glove protection campaign](#)
- [COSHH Essentials](#)
- [HSE Books](#)
- [The National Eczema Society](#)

Related content

- Catering
- Construction
- COSHH
- Handdressing
- Health services
- Printing

<http://www.hse.gov.uk/skin/employ/dermatitis.htm>

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Skin checks for dermatitis

Regularly check your skin for early signs of dermatitis



Look for...

Dryness Itching Redness

...which can develop into
**flaking, scaling
cracks, swelling
and blisters**

If you think you may have dermatitis, report it to your employer
Contact name
Your employer may need to refer you to an Occupational Health Doctor or Nurse



www.hse.gov.uk

<http://www.hse.gov.uk/skin/posters/skindermatitis.pdf>

Svært nyttig opplæringsmaterieell som viser hvordan arbeidsgivere må sikre riktig valg av hansker

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Skin at work

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Choosing the right gloves to protect skin: a guide for employers

Protecting against substances in the workplace

The most effective and reliable way to prevent skin problems is to design and operate processes to [avoid contact with harmful substances](#). So take all the steps you can to achieve this before resorting to the use of protective gloves.

Protective gloves tend to be less effective than other control measures but if avoiding contact is impractical or is not enough to protect employees then gloves may be needed. When you select protective gloves, base your choice on the work, the wearer and the environment they work in. You need to consider the following five factors:

- Identify the substances handled.
- Identify all other hazards.
- Consider the type and duration of contact.
- Consider the user – size and comfort.
- Consider the task.

Identify the substances handled

- Gloves differ in design, material and thickness. No glove material will protect against all substances and no gloves will protect against a specific substance forever.

Water/wet work

- Prolonged or frequent contact with water, particularly in combination with soaps and detergents, can cause dermatitis. 'Wet work' is the term used to describe tasks in the workplace that can cause this.
- To protect the hands from 'wet work' choose a glove that meets the European Standard EN374-2. This shows that the gloves are waterproof.

Resources

- It's in your hands
- Skin checks for dermatitis
- Free poster
- Keep your top on: INDG 147
- More resources

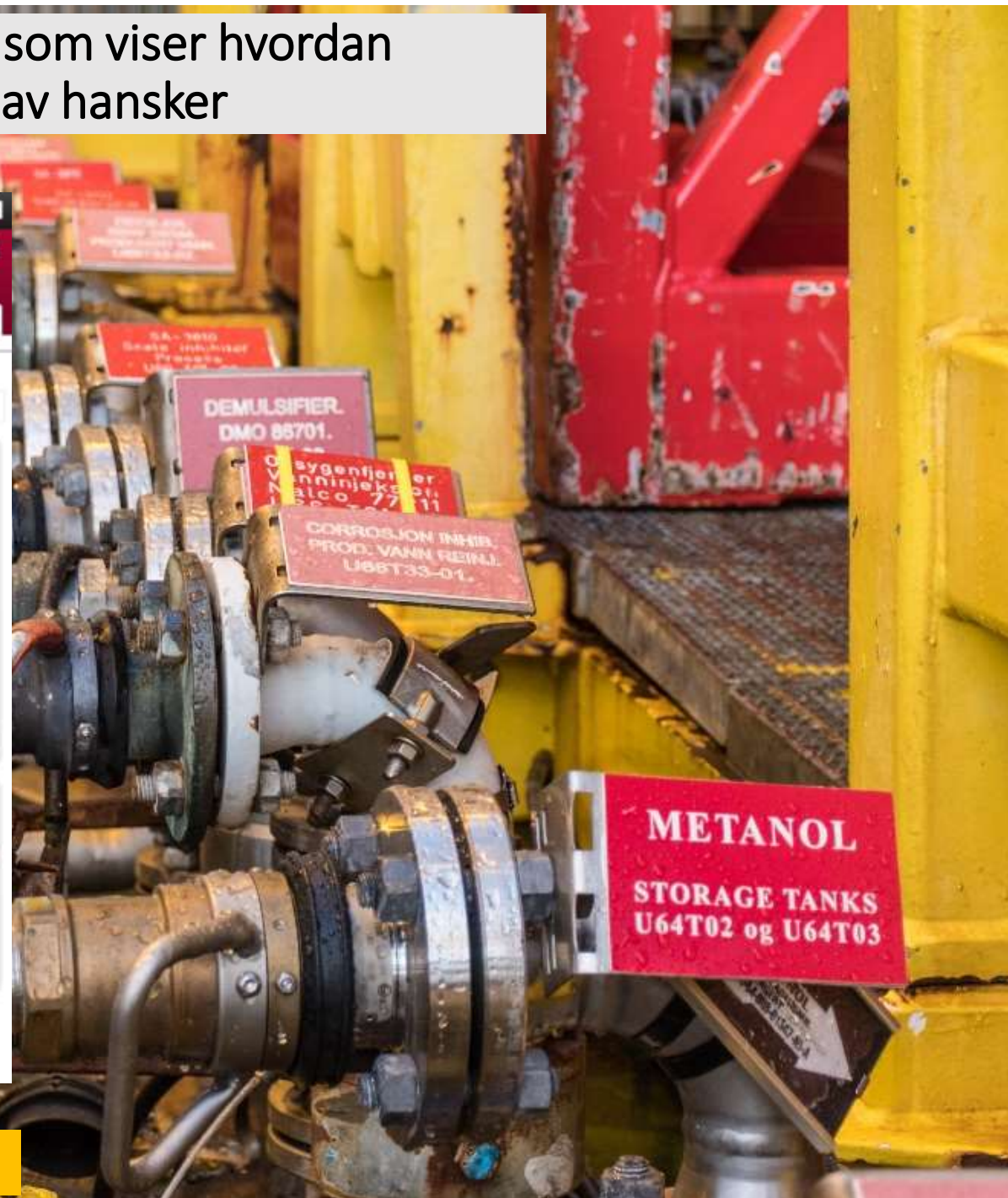
See also

- BCDS links
- British Safety Council – glove protection campaign
- COSHH Essentials
- HSE Books
- The National Eczema Society

Related content

- Catering
- Construction
- COSHH
- Handdressing
- Health services
- Printing

<http://www.hse.gov.uk/skin/employ/gloves.htm>



Mye bra opplæringsmateriell bak denne lenken

Prevent work-related dermatitis

IT'S IN YOUR HANDS[©]



<http://www.hse.gov.uk/skin/professional/trainingresources.htm>

Eksponering av hud kan gi mange helseeffekter



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Environmental Health Insights

Supplementary Issue: Occupational Health and Industrial Hygiene

Potential Health Effects Associated with Dermal Exposure to Occupational Chemicals

Stacey E. Anderson and B. Jean Meade

National Institute for Occupational Safety and Health, Morgantown, WV, USA

ABSTRACT: There are a large number of workers in the United States, spanning a variety of occupational industries and sectors, who are potentially exposed to chemicals that can be absorbed through the skin. Occupational skin exposures can result in numerous diseases that can adversely affect an individual's health and capacity to perform at work. In general, there are three types of chemical-skin interactions of concern: direct skin effects, immune-mediated skin effects, and systemic effects. While hundreds of chemicals (metals, epoxy and acrylic resins, rubber additives, and chemical intermediates) present in virtually every industry have been identified to cause direct and immune-mediated effects such as contact dermatitis or urticaria, less is known about the number and types of chemicals contributing to systemic effects. In an attempt to raise awareness, skin notation assignments communicate the potential for dermal absorption; however, there is a need for standardization among agencies to communicate an accurate description of occupational hazards. Studies have suggested that exposure to complex mixtures, excessive hand washing, use of hand sanitizers, high frequency of wet work, and environmental or other factors may enhance penetration and stimulate other biological responses altering the outcomes of dermal chemical exposure. Understanding the hazards of dermal exposure is essential for the proper implementation of protective measures to ensure worker safety and health.

KEYWORDS: dermal, chemical, toxicity, occupational

SUPPLEMENT: Occupational Health and Industrial Hygiene

CITATION: Anderson and Meade. Potential Health Effects Associated with Dermal Exposure to Occupational Chemicals. *Environmental Health Insights* 2014 8(51): 51-62. doi: 10.4137/EHI.S15268

of chemicals in use. Skin and inhalation are the two most common occupational routes of chemical exposure. Historically, efforts have been aimed at regulating respiratory exposures; however, the contribution of skin exposure in the development of systemic disease is gaining increased recognition. In particular, studies are beginning to demonstrate the contribution of skin exposure to the development of respiratory sensitization and altered pulmonary function. The skin is the largest organ of the body, and while less volatile chemicals are known to directly penetrate the skin to induce toxicity, there is also evidence of a contribution from vapors or aerosolized chemicals that should not be overlooked. While contact dermatitis is one of the most common and well-understood occupational diseases, increasing the awareness about potential systemic effects following skin exposure to chemicals is also of occupational importance. Not only does skin exposure have the potential to contribute to total body burden of a chemical but also the skin is a highly biologically active organ capable of chemical metabolism and the initiation of a cascade of immunological events, potentially leading to adverse outcomes in other organ systems.

Workers should be aware not only of the hazards associated with the chemicals in their environment but also of conditions that are likely to enhance the systemic absorption of these chemicals. Factors such as excessive hand washing, use of hand sanitizers, high frequency of wet work, exposure to chemical mixtures, or wearing occlusive gloves can change the integrity or function of the skin and play a role in enhancing chemical penetration or sensitization by influencing additional biological responses.

Allergisk kontakteksem versus irritativ kontakteksem



Workplace Safety and Insurance
Appeals Tribunal

Tribunal d'appel de la sécurité professionnelle
et de l'assurance contre les accidents du travail

Allergic Contact Dermatitis versus Irritant Contact Dermatitis

Discussion paper prepared for

The Workplace Safety and Insurance Appeals Tribunal

May 2008

Revised November 2014

Prepared by:

Dr. S. Skotnicki

University of Toronto

Division of Dermatology and Occupational Health
St. Michael's Hospital

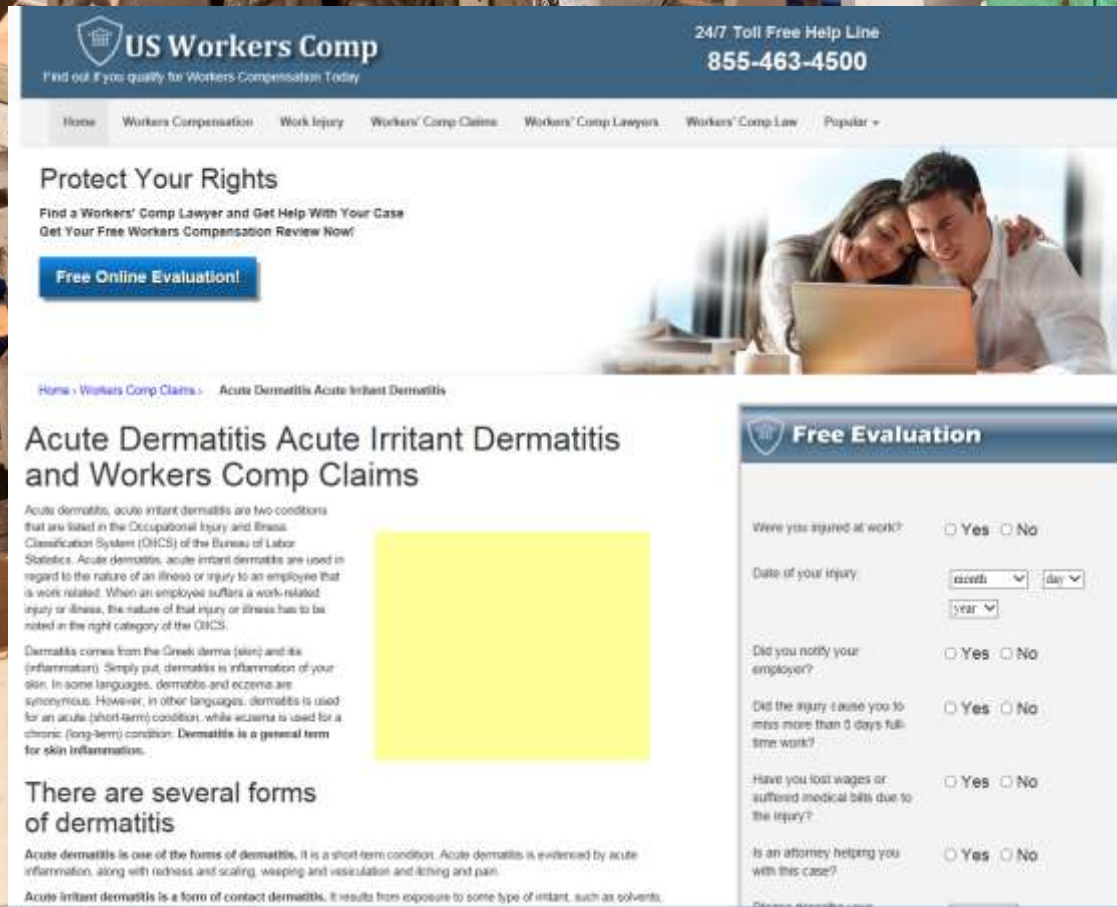
Allergic Contact Dermatitis versus Irritant Contact Dermatitis

Picture 9: Patch test 48 hour initial read after patches removed



Patch Test Trays

Eksempel på amerikansk yrkesskadeforsikring



US Workers Comp
Find out if you qualify for Workers Compensation Today

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855-463-4500

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Protect Your Rights

Find a Workers' Comp Lawyer and Get Help With Your Case
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Free Online Evaluation!

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Acute Dermatitis Acute Irritant Dermatitis and Workers Comp Claims

Acute dermatitis, acute irritant dermatitis are two conditions that are listed in the Occupational Injury and Illness Classification System (OIIIS) of the Bureau of Labor Statistics. Acute dermatitis, acute irritant dermatitis are used in regard to the nature of an illness or injury to an employee that is work related. When an employee suffers a work-related injury or illness, the nature of that injury or illness has to be noted in the right category of the OIIIS.

Dermatitis comes from the Greek derma (skin) and its (inflammation). Simply put, dermatitis is inflammation of your skin. In some languages, dermatitis and eczema are synonymous. However, in other languages, dermatitis is used for an acute (short-term) condition, while eczema is used for a chronic (long-term) condition. Dermatitis is a general term for skin inflammation.

There are several forms of dermatitis

Acute dermatitis is one of the forms of dermatitis. It is a short-term condition. Acute dermatitis is evidenced by acute inflammation, along with redness and scaling, weeping and vesiculation and itching and pain.

Acute irritant dermatitis is a form of contact dermatitis. It results from exposure to some type of irritant, such as solvents.

Free Evaluation

Were you injured at work? ☐ Yes ☐ No

Date of your injury: month day
year

Did you notify your employer? ☐ Yes ☐ No

Did the injury cause you to miss more than 3 days full-time work? ☐ Yes ☐ No

Have you lost wages or suffered medical bills due to the injury? ☐ Yes ☐ No

Is an attorney helping you with this case? ☐ Yes ☐ No

Please read disclaimer below

<https://www.usworkerscomp.com/workers-compensation-claims/acute-dermatitis-acute-irritant-dermatitis>

Valg av riktige hansker krever faglige vurderinger

Personal protective equipment

Personal protective equipment

The use and abuse of gloves

Are your gloves really protecting you? For many the answer will almost certainly be probably not, particularly where protection is needed against hazardous chemicals, says Chris Packham.

In a recent paper published in *The Annals of Occupational Hygiene* a team of dermatologists investigated the uptake into the body through the skin of carbon disulphide, classified in the latest Classification, Labelling and Packaging (CLP) Regulations as capable of causing damage to internal organs from skin exposure as well as being a skin irritant. They appeared surprised to find that wearing nitrile or natural rubber latex gloves resulted in an increase. What they had not recognised is that this chemical will quickly migrate through the glove materials and then make contact with the skin. The barrier properties will have been impaired due to the hyperhydration that results from both sweat and, importantly, trans-epidermal water loss, a generalised continuous loss of water through the skin quite separate from sweat.

A complex picture

The selection and use of gloves for chemical protection is much more complicated than many realise. It is incorrect to assume that the data on glove performance published by manufacturers in accordance with the standard (EN374) will actually tell you what your gloves will achieve in practice.

Permeation – that is the transport at a molecular level – is undetectable by the wearer and can vary enormously depending upon the many factors shown in the table. In use testing with a glove with a nominal permeation breakthrough time of 36 minutes against xylene showed breakthrough times varying from two hours to five minutes depending upon the nature of the actual task.

Mixtures present an even more complex picture. A glove that could provide a permeation breakthrough time of more than 240 minutes with toluene and methyl ethyl ketone individually showed, when these were mixed in equal proportions, a breakthrough time of just nine minutes.

Indeed, for some common chemicals there is no glove that offers little more than 'splash protection'. In other words, should the chemical come into contact with the glove, it is important that it is immediately removed and, if necessary, replaced with a fresh glove. Since in some cases, such as with the carbon disulphide, the only glove that offers any real protection may cost upwards of £25 per pair, protection using gloves can become an expensive approach.

Wet work

As well as the potential for the glove to fail to protect, we need to recognise that all occlusive gloves will actually cause damage to the skin itself. We are not referring here to allergic reactions to the gloves but to the accumulation of excessive water in the skin. This can lead to what dermatologists have called 'hydration dermatitis'. Indeed, wearing chemical protective gloves is equivalent to 'wet work', for example skin contact with water, a common cause of irritant contact dermatitis.

The belief that this can be controlled by the application of creams that can block sweat is misguided. Blocking sweat glands will not stop the production of sweat by the glands. This is then forced through the sweat duct into the skin and can cause adverse effects on the cells in the epidermis. Nor can the cream prevent the trans-epidermal water loss that is a

Factors affecting the performance of chemical protective gloves

Reduce the duration of protection

- Degradation
- High temperature
- Flexing and stretching
- Mechanical damage, including abrasion
- Poor maintenance
- Ageing
- Mixtures

Increase the duration of protection

- Intermittent or incomplete contact
- Volatility
- Low temperature
- Frequent glove washing
- Mixture strength



major cause of skin hyperhydration due to occlusion. Furthermore, the active ingredient in these creams, usually aluminium chlorohydrate, is a recognised skin sensitizer and, in the micro-environment that will exist inside the glove, could possibly result in sensitisation and allergy. In fact, the Personal Protective Equipment (PPE) Regulations address this problem.

Appendix II, paragraph 2.2. 'Enclosing parts of the body to be protected' states: 'As far as possible, PPE 'enclosing' the parts of the body to be protected must be sufficiently ventilated to limit perspiration resulting from use; if this is not the case, it must if possible be equipped with devices which absorb perspiration.'

To date the only effective way of effectively minimising skin hyperhydration from the wearing of occlusive gloves is to wear separate cotton gloves beneath the chemical protective gloves.

A last resort

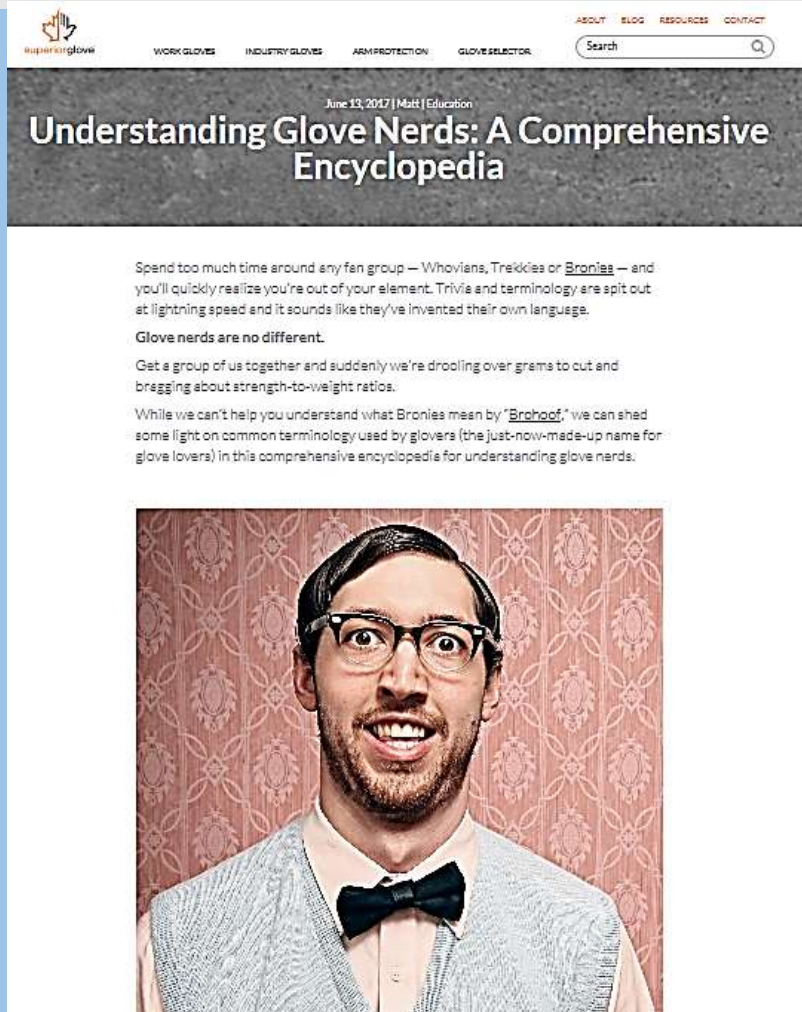
It should be obvious from this article that the selection and use of gloves to protect against chemical hazards is actually more complex than might at first appear. Bear in mind that any failure is fail-to-danger, exposing the wearer's potentially damaged skin to the chemical hazard.

Perhaps this is why, with only limited exception, under the Control of Substances Hazardous to Health (COSHH) Regulations and the PPE Regulations the use of protection is considered a last resort to be applied only when all other means of managing exposure have been applied and there is still a residual risk due to skin exposure.

Chris Packham is a dermatological engineer at EnviroDerm Services: www.enviroderm.co.uk



Teknisk om hansker og beskrivelse av hvordan hansker testes



The screenshot shows the top navigation bar of the Superior Glove website with links for ABOUT, BLOG, RESOURCES, and CONTACT. Below the navigation bar is a search bar. The main content area features the title "Understanding Glove Nerds: A Comprehensive Encyclopedia" dated June 13, 2017, by Matt | Education. The text discusses the terminology used by glove enthusiasts, comparing it to fan groups like Whovians or Trekkies. It mentions that while we can't help understand what Bronies mean by "Bronhof", we can shed some light on common terminology used by glove lovers. Below the text is a photo of a man with glasses and a bow tie, smiling.

<https://www.superiorglove.com/blog/understanding-glove-nerds-a-comprehensive-encyclopedia>

Vaskeprosedyrer for ulike typer hansker



The infographic is titled "GLOVE LAUNDERING" and provides detailed instructions for washing different types of gloves. It includes a general guideline and specific instructions for Kevlar, Leather, Nylon, Wool, Dyneema, and Cotton/Polyester gloves. A photo of a white glove is shown in the center.

GLOVE LAUNDERING

Washing gloves very often results in significant savings, especially if you are using high quality leather, Dyneema or Kevlar® gloves. Superior will gladly assist you with any questions and provide you with information on laundering.

Contact our customer service department for tips, especially the DO'S and DON'TS of glove laundering. We will also provide you with information you need to locate the best laundries in your area. Professional glove laundries will know how to wash any type of glove.

Here is a general guideline that may be helpful.

KEVLAR® GLOVES

- Kevlar® is inherently cut-resistant, meaning that cut resistance is unchanged over the lifetime of the glove in spite of repeated laundering.
- Kevlar® can be washed over and over, with no effect on shrinkage, weight loss or changes in tensile strength. Kevlar® is resistant to many chemicals and solvents, with the exception of strong acids, bases and oxidizers.
- Kevlar® must never be bleached. However, oxygen 'bleach' can be used in place of chlorine bleach.

Detergent Wash

1. Use approx. 2.5 kg commercial laundry soap or detergent per 45 kg Kevlar®.
2. Use Hot water: 170°F/75°C
3. Wash for 20 minutes.
4. Rinse with Hot water.
5. Repeat steps 3 and 4 if necessary.
6. Rinse in Cold water.
7. Tumble dry for 36 minutes at 165°F/70°C.

Dry Cleaning

1. Pre wash using perchloroethylene for 5 minutes.
2. Drain.
3. Wash for 20 minutes using perchloroethylene and 12 oz of anionic surfactant/100lbs of Kevlar®.
4. Tumble dry at 140°F/100°C or less.

DYNEEMA® GLOVES

Dyneema® can be washed, dry-cleaned, and bleached, all without affecting the specific properties of Dyneema®. However, Dyneema® does have one limitation: temperature. It will not withstand temperatures—wet or dry—over 291°F/144°C, so keep this in mind.

- Standard detergents, ammonium, sodium hydroxides, hydrochloric acid, etc., are not known to affect the performance of the Dyneema® fiber. This enables you to wash and re-use the gloves many times.
- Use Cold water only: 104°F/40°C or less.
- Tumble dry low or no heat.

LEATHER GLOVES

- It is generally recommended that leather gloves be dry cleaned. Soap and water removes the natural oils present in the leather, causing them to stiffen and become brittle.

NYLON GLOVES

- Use warm water: 105°F/40°C
- Wash with a regular detergent.
- Tumble dry at low or no heat.

WOOL GLOVES

- Use Cold water only: 68°F/20°C or less.
- Use a mild detergent and gently wash.
- Tumble dry at low or no heat.

COTTON/POLYESTER GLOVES

- Use warm water: 105°F/40°C
- Wash with a regular detergent.
- Tumble dry, medium heat.

COATED GLOVES

- Use cold water: 86°F/30°C or less.
- Use a mild detergent.
- Tumble dry low or no heat.
- Bleach is not recommended.

Dyneema® is a registered trademark of Royal DSM NV. Kevlar® is a registered trademark of ST. Laurent Hanrovia and Company.

European Office
+35 (45) 7746 801 830 | graham.ayres@superiorglove.com
www.superiorglove.com



<http://www.superiorglove.com/blog/wp-content/uploads/LAUNDERING-GUIDES-COLOR-1.pdf>

God oversikt på hanskematerialers bestandighet mot ulike kjemiske forbindelser

GLOVE SELECTION CHART

Do you know if the glove you are using is right for the tasks you do?

Choosing the Right Glove

First: Determine the Hazard

What is the main hazard? Are you concerned with protection from hazardous chemicals, biological materials, radioactive materials, sharp objects, or a combination of these? Also, consider the length of exposure.

Second: Glove Selection

In general *latex* and *nitrile* gloves are by far the most common gloves used in research laboratories on campus. Standard latex exam gloves are cheap and do provide protection for biological and aqueous radioactive hazards. However, you probably won't find them listed in chemical glove selection guides, so, if your main concern is chemical protection then this is not the glove for you. While disposable nitrile gloves are slightly more expensive than latex, you can find glove selection data for some of them.

1. Chemical Hazard

Look at glove selection guides in catalogs or websites of various scientific and safety suppliers. Gloves are rated for degradation, breakthrough, and permeation rates. Choose a glove that provides the best resistance to the chemical being used. For some hazards double gloving may be needed. (For example, now the recommended gloves for dimethyl mercury are a highly resistant laminate glove (Silver-Shield or 4H), which has no abrasion/cut resistance, worn under a pair of long cuffed unsupported neoprene, nitrile, or similar heavy-duty glove.)

2. Biological Hazards

Protection from biological hazards may be simple or complex dependent on whether the biological material is immersed in something other than water.

3. Radioactive Hazards

Gloves provide a necessary personal protection barrier and help prevent scatter contamination. Glove selection is based on the carrier material (i.e. water, toluene, etc.). (Radioiodination procedures require double gloving.)

4. Sharps Hazards

Chemical compatibility guides may not indicate susceptibility to abrasion or cuts. You will need to check Manufacturer or Supplier for this information.

5. Combination Hazard

Selection guides normally list gloves by the protection they provide from one "pure" chemical, not a combination. In this case selection should be based on the component with the shortest breakthrough time.

The following guide is a general guide for glove selection in relation to chemicals handled. The information presented here is believed to be accurate; however, we cannot guarantee its accuracy. Many factors affect the breakthrough times of glove materials including, but not limited to:

1. Thickness of glove material
2. Concentration of the chemical worked with
3. Amount of chemical the glove comes in contact with
4. Length of time which the glove is exposed to the chemical
5. Temperature at which the work is done
6. Possibility of abrasion or puncture.

Hudkontakt og hudopptak gir alvorlige helseproblem!

Arbeidsmiljøforskriftene

Forskrifter til arbeidsmiljøloven er fastsatt av Arbeidsdepartementet og håndhevet av Arbeidstilsynet og Pol på sine respektive myndighetsområder.

Følgende arbeidsmiljøforskrifter trådte i kraft 1.1.2013:

- Forskrift om organisering, ledelse og medvirkning**
Forskriften stiller krav til medvirkning, risikovurdering, opplæring, informasjon, planlegging og risikostyring av arbeidstakerne for å sikre at de får en sikker og sunn arbeidsplass.
- Forskrift om utforming og innretning av arbeidssteder og arbeidsutrustning**
Forskriften stiller krav til blant annet utforming og innretning av arbeidssteder. Forskriften er relevant for de fleste virksomheter - også for utleiers av arbeidssteder og inneholder også bestemmelser for spesielle risikområder.
- Forskrift om administrative ordninger på arbeidsplassen**
Forskriften gjelder ordninger for sikkerhet, helse og miljø på arbeidsplassen. Forskriften gjelder for alle virksomheter og arbeidstakere.
- Forskrift om sikkerhet ved bruk av arbeidsutrustning og arbeidsutrustning**
Forskriften stiller krav til sikkerhet ved bruk av arbeidsutrustning og arbeidsutrustning.

Kartlegging og vurdering av eksponering for kjemiske og biologiske forurensninger

Kartlegginger og risikovurderinger som grunnlag for prioritering av tiltak er en viktig del av det systematiske forebyggende HMS-arbeidet.

Virksomheter skal, i tillegg til målinger, fortsette arbeidet for å redusere eller fjerne forurensninger eller forurensningskilder. Eksponering skal holdes på et så lavt nivå som er praktisk gjennomførbart, som tekniske forberedninger og utskifting av helsekodelige stoffer.

I mange tilfeller er det nødvendig å gjøre målinger for å bestemme nivå av forurensninger og kunne vurdere risiko, og særlig ved fare for høy eksponering og mangel på helsekodelige stoffer.

Målinger må være representative for den faktiske eksponeringen. Dette krever oppdatert fagkunnskap om kartlegging og vurdering av eksponering for forurensninger i arbeidsmiljøet.

De egen bestemte som metoder for måling av forurensninger i arbeidsmiljøet.

Det er utarbeidet standarder for prøvetaking av kjemiske og biologiske forurensninger som skisserer strategier for kartlegging og vurdering av eksponering for forurensninger i arbeidsmiljøet.

Kartleggings- og vurderingsprosessen består av følgende steg (basert på standarden NS-EN 689):

1. Inledende vurdering
2. Forundersøkelser
3. Detaljert undersøkelse
4. Periodiske målinger

Kravene til dokumentasjon eller tittelvis i kartleggings- og vurderingsprosessen. Hvor langt en trenger å gå, avhenger av hva som allerede er kjent, og hva som blir avdekket om eksponeringen. Det er viktig å søke råd hos personer med prosesskunnskap/erfaring fra

<https://www.arbeidstilsynet.no/tema/kjemikalier/kartlegging-og-vurdering-av-eksponering-for-kjemiske-og-biologiske-forurensninger/>

www.ptil.no/arbeidsmiljoforskriftene/category1014.html

Åpent Lende

Huden

”Stærk, men følsom”

Foredrag gitt av professor emeritus Allan Nyfors.
SAFE og Norsk Flygerforbunds konferanse
”Åpent lende” Sandnes 6. - 7. – 8. mai 2008
Veldig bra, lærerik og nyttig!

<https://safe.no/wp-content/uploads/2015/07/Allan.pdf>

Arbeidsmiljøunderlag



<http://www.ptil.no/getfile.php/1344716/PDF/Kontroll%20med%20avlftingspunkt%20prosess%20og%20roterende%20utstyr%20Halvor%20Erikstein.pdf>



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