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# Substitution and innovation

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# ***Substitution and REACH***

**Substitution is prevention – in stead of enclosure of mashines or workers**

**Substitution is only included as part of the authorisation part of REACH.**

**Only for:**

- **Carcinogenic, Mutagenic, and Repro-toxic substances**
- **Persistent, bioaccumulating, and toxic substances + vPvB's**
- **Substances with "equivalent level of concern" – Endocrine Disrupting Chemicals?**



# ***Mandatory substitution?***

**Council and Parliament have a different view on substitution in 1st reading.**

**Parliament: Only authorisation if**

- **Suitable alternatives do not exist**
- **Measures to minimise exposure are taken**
- **Social and economic advantages outweigh the risks**
- **Adequate control, documented in chemical safety report**

**Council: adequate control *or* no alternatives**

**Except no adequate control for CMRs without threshold value or for PBT's and vPvB's.**

**NGO position: substitution should be mandatory if alternatives exist**



# ***A forward-looking strategy***

**Substitution should also be considered for other hazardous substances, not included in authorisation**

**Substitution can cost money – in the short term**

**But it can improve competitiveness in the long term**

**Good for a company to look through its procedures and raw materials**

**"Hazardous chemicals can be substituted", January 2006, The Ecological Council, 95 pages**

**Substitution of organic solvents since the early 1980'ies**

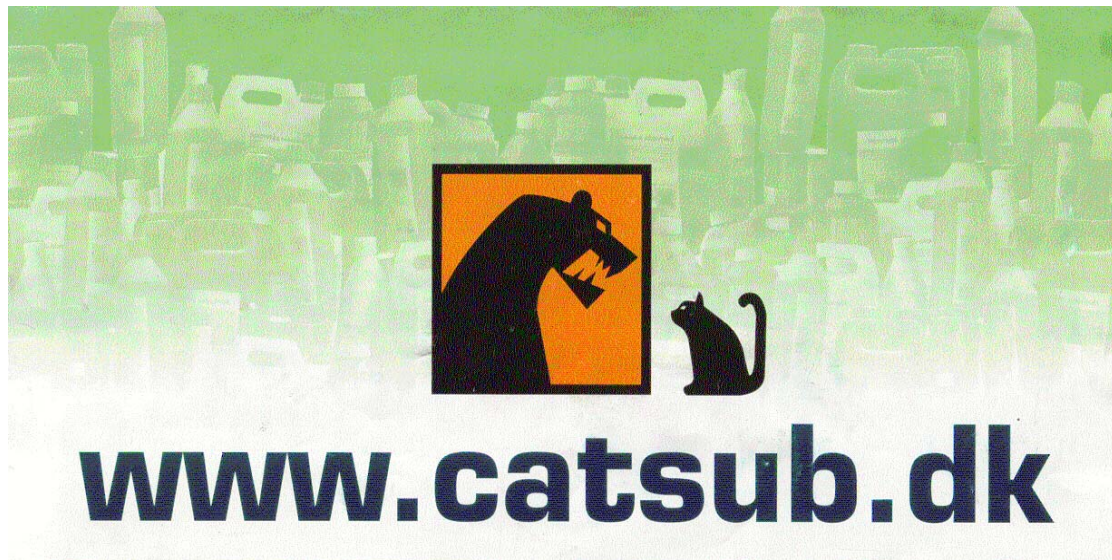


# *Substitution Website*

## Tools for promoting substitutions

[www.catsub.dk](http://www.catsub.dk): 200 examples

Danish EPA and Working Environment Authority +  
European Working Environment Agency



# ***Industries and tools***

**14 examples of substitution in Danish companies**  
**Small and large companies**

## **Different industries:**

- **Packaging**
- **Hygiene articles**
- **Textile cleaning**
- **Food industries**
- **Metal industries**
- **Chemical industries**  
(down stream: paint&varnish, glue)
- **Electronics and electrical appliances**
- **Playground equipment**



# ***Tools to promote substitution***

**EU list of hazardous substances – app. 8,000 substances**

**List of working environment limit values**

**Danish EPA, list of unwanted substances – app. 50 substances and groups, i.e. phthalates and brominated flame retardants**

**How to create a market**

**Information to consumers – private and professionals – is crucial:**

**Eco-labelling and safety data sheets**

**Economic tools: - green taxes**

**- green public procurement policies**



# ***Examples***

## **Danfoss**

**Produces valves, motion controls etc.**

**17,500 employees, including 6,000 in Denmark**

**Has substituted chlorinated paraffins in the metal working fluids**

**Chlorine based coolants: 250 → 7 tons per year**

**Different alternatives: cooking oils, sulphur-compounds, phosphorous- og zinc-compounds**

**Substitution decided by the management**

**Employees involved from an early stage**





# *Danfoss*

## **Results:**

**Increased job satisfaction, among developers as well as production workers**

**Danfoss has improved its environmental image**

**Would recommend other companies to do the same**



# ***Kymi Cleaning***

**Textile cleaning. 15 employees**

**Substitution of perchloroethylene→**

- **aqua clean – computer controlled washing process with pure water**
- **CO<sub>2</sub>-cleaning – liquid CO<sub>2</sub> under high pressure**
- **Silicone based process**



# *Kymi Cleaning*

**For different types of cleaning.**

**For instance CO2-cleaning can remove oil- and grease stains, much better than Aqua-clean**



# *Improving job satisfaction*

***“Substitution can be recommended to everyone. The idea of substitution and the substitution process itself is very fascinating. It is all about thinking ahead and constantly developing and improving the product. My job would not have been half as exiting had it not been for that.”***

**The person responsible for environmental issues at Abena A/S – producing personal hygiene products**



# >Titel<

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## Indhold

