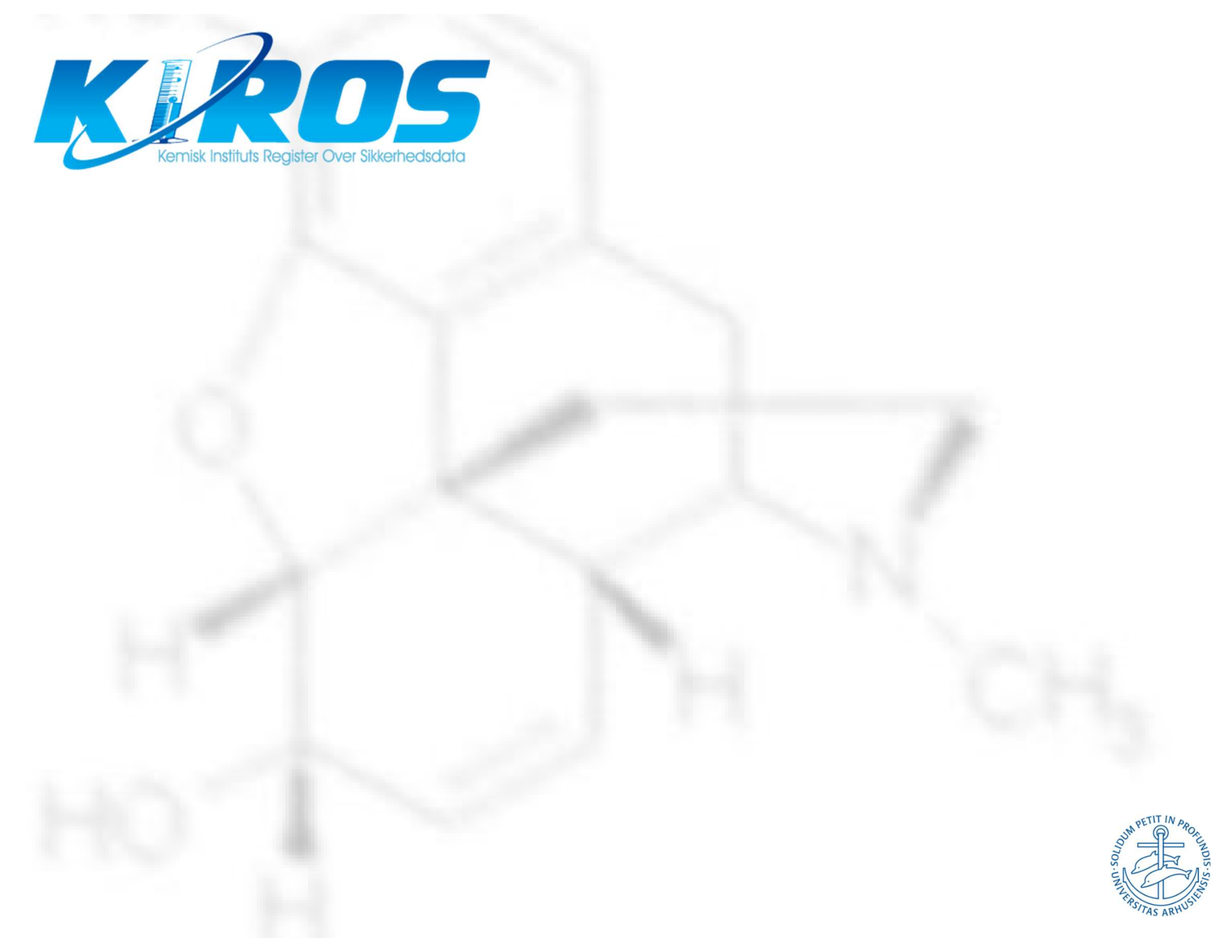
KIROS

Kemisk Instituts Register Over Sikkerhedsdata



SOLIDUM PETIT IN PROFUNDIS · UNIVERSITAS ARHUSIENSIS ·

AU Chemicals Network

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Chemical legislation, work environment, dangerous goods, waste, Kiros

Kiros

- AU's database for chemicals
- Contains SDS and tox data
- Administration of the group's chemistry
- Kiros admin and Kiros.dk

What to register?

- Hazardous chemicals that are in use in the group
- Own mixtures
- Own synthesized products
- Exempted: Substances and mixtures that are not hazardous (not classified or max 1% with occupational limit). But you can register them anyway

Why Kiros?

- Centralized knowledge of classification of chemicals
- Basis for uniform handling of the safety work
- Classification of mixtures
- Exchange of chemicals across AU

Use of Kiros

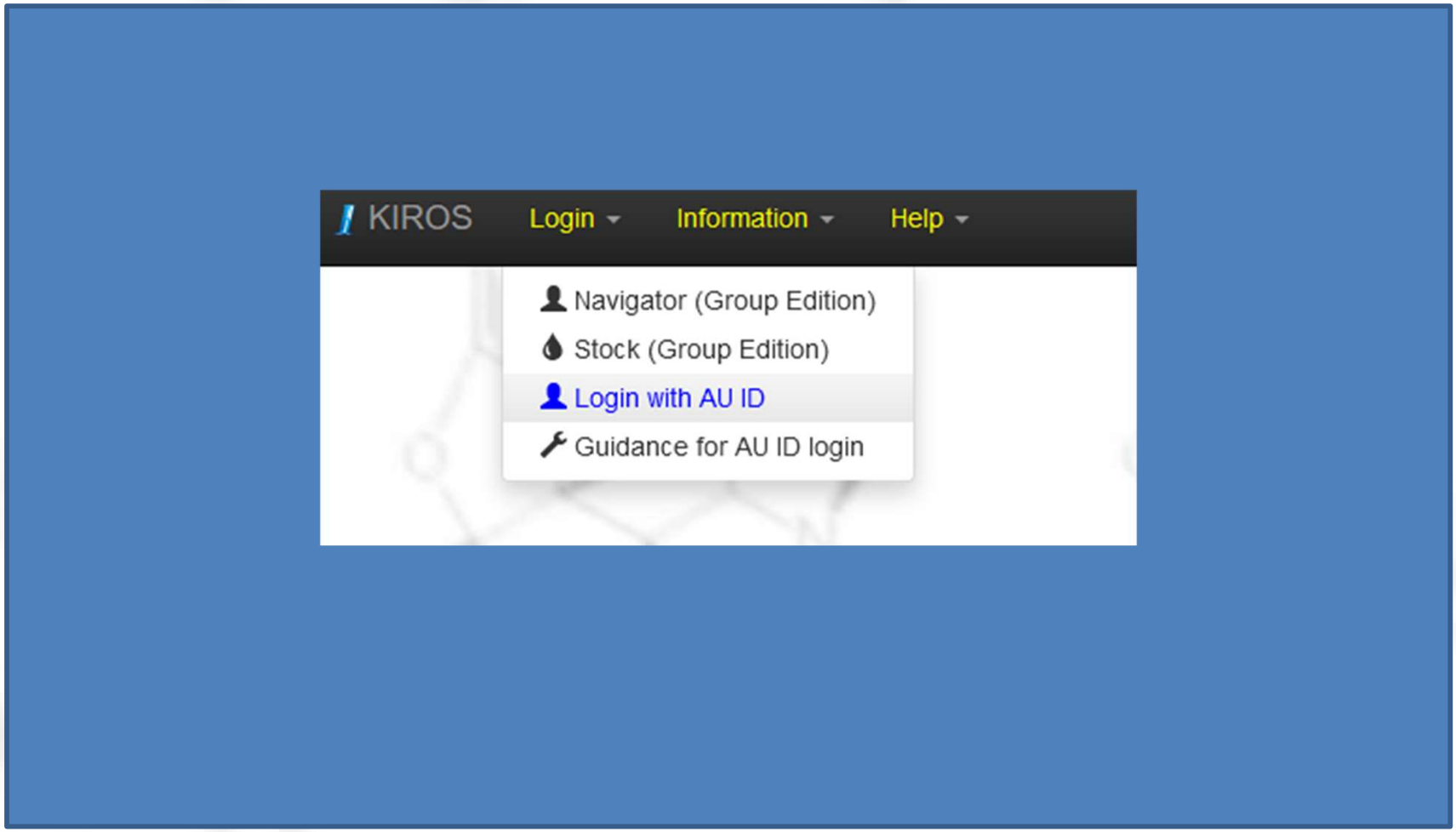
- Log-in to Kiros
- Search of chemicals in Kiros
- Add chemicals to your group
- Add new users to your group
- Notify Kiros with new chemicals
- Labels, lists, ”tillægsdatabladet”
- Chemical risk assessments

Log-in to Kiros

- Kiros.dk

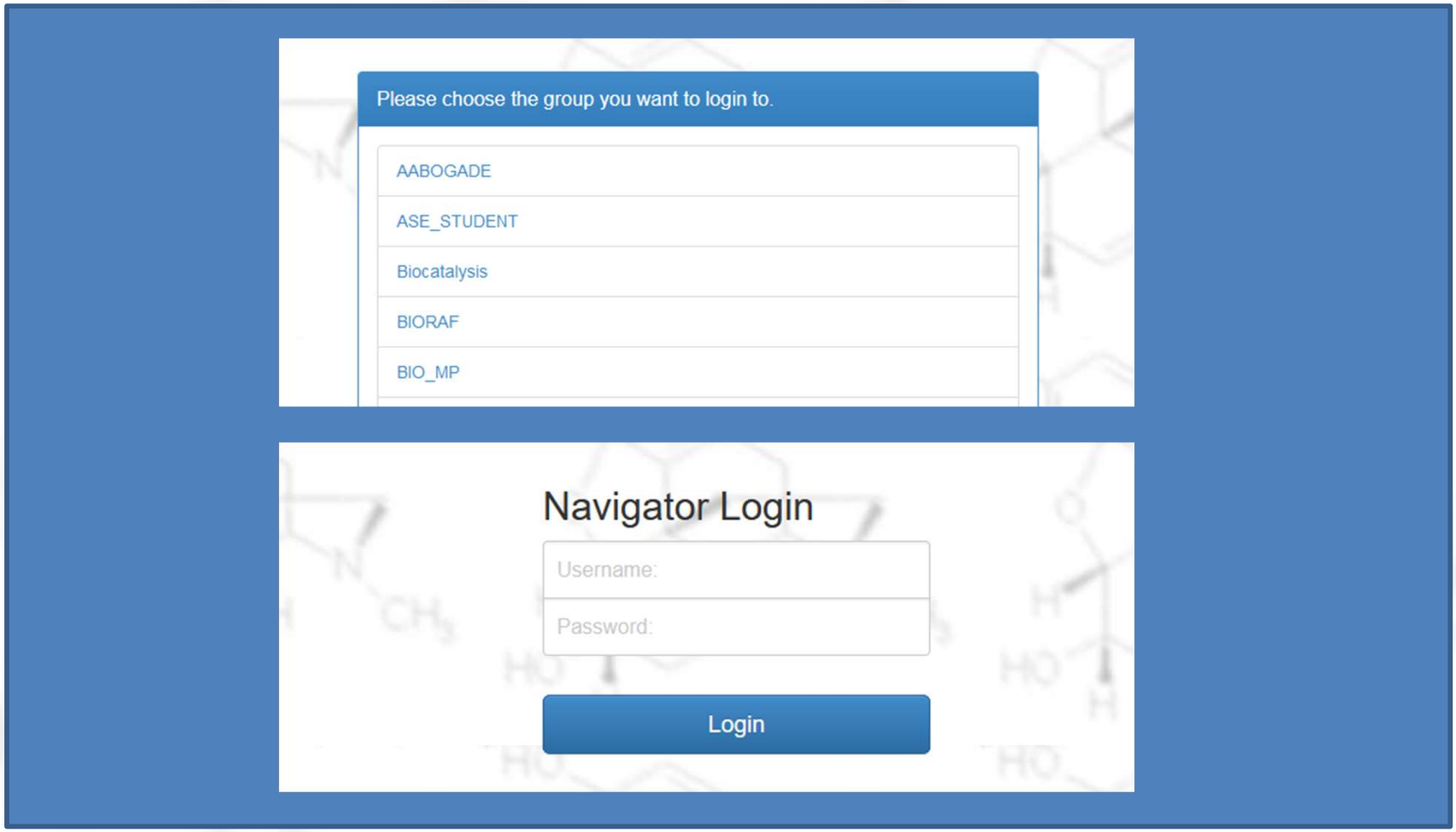
Log-in to Kiros

- Choose user type



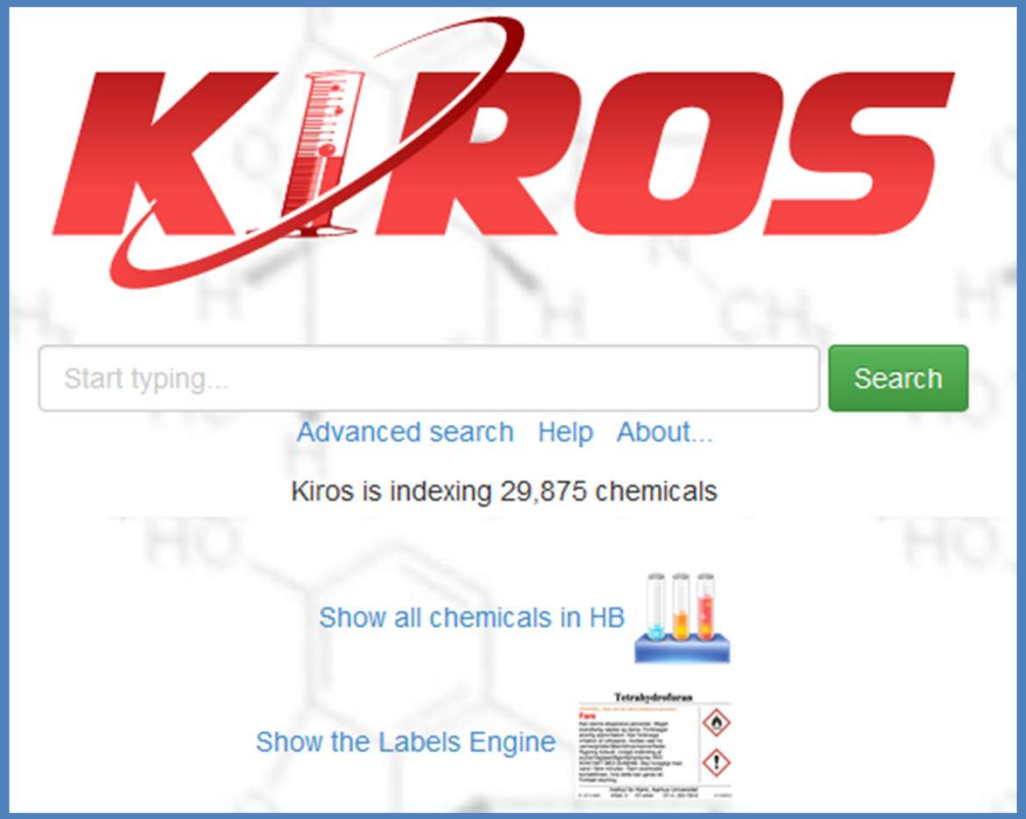
Log-in to Kiros

- Log in (contact the group's admin)



Search for chemicals (user)

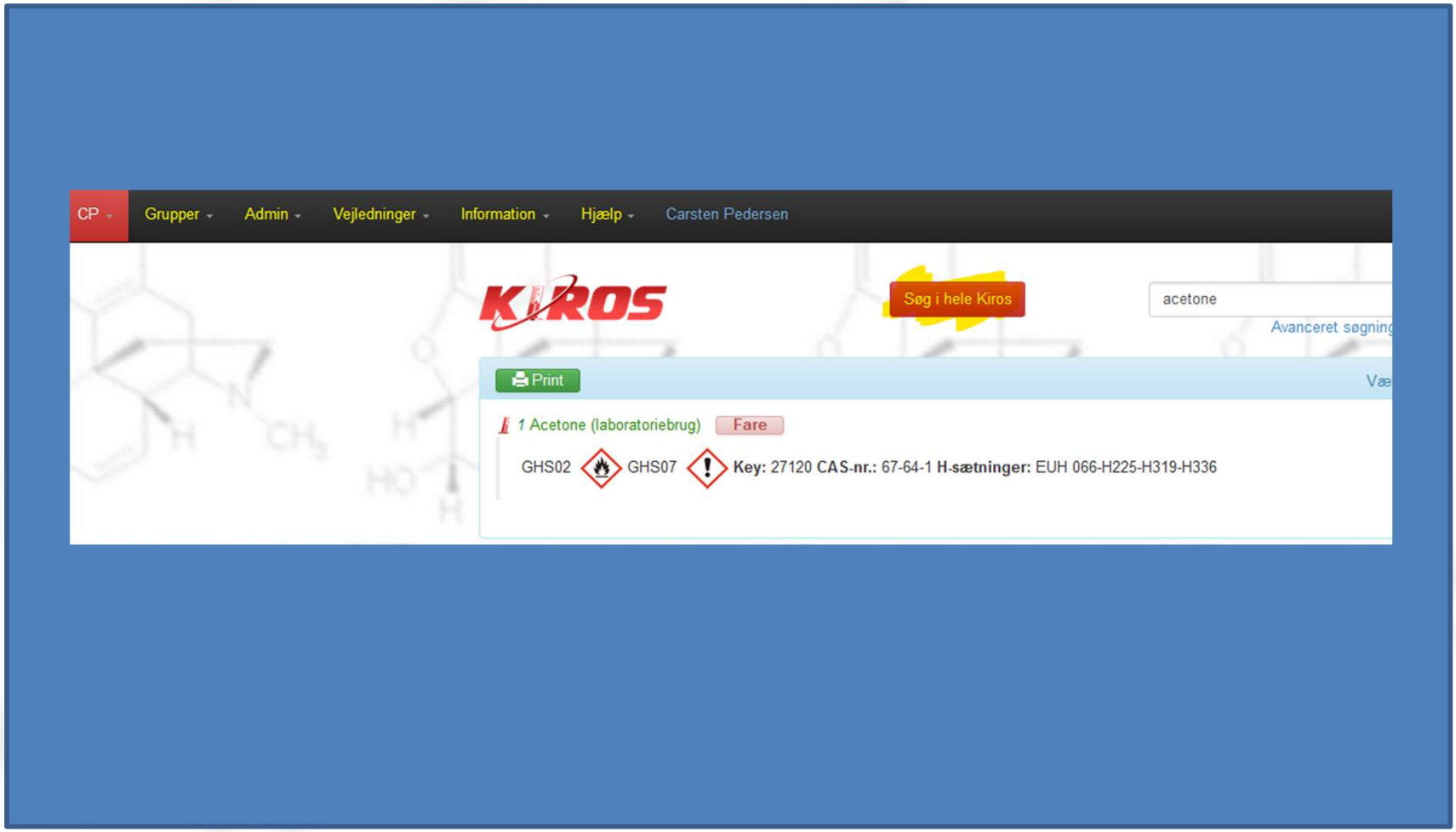
- Simple search in Kiros...



Login:
User: CP
PW: CP

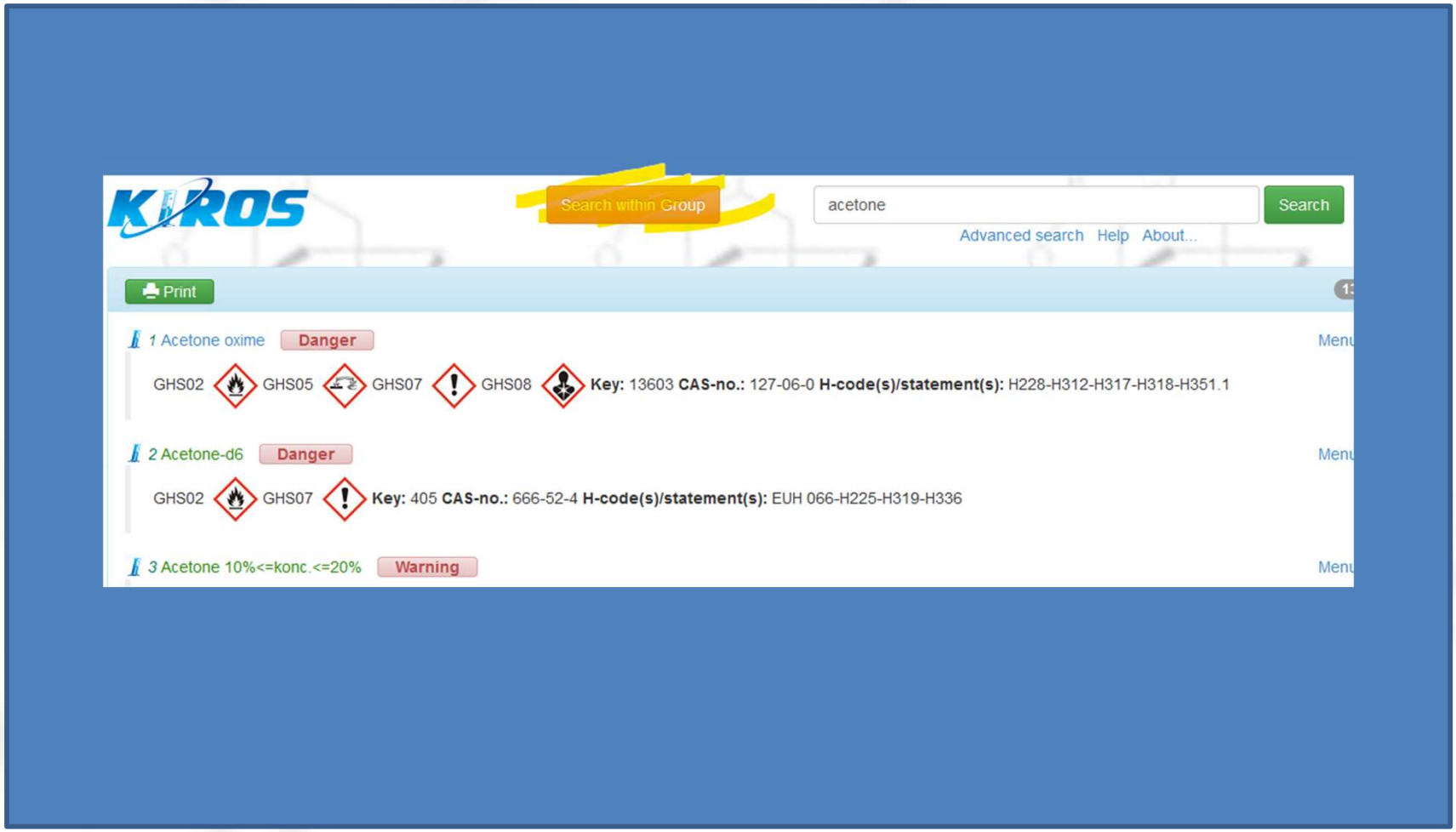
Search for chemicals (user)

- ....first in own group..



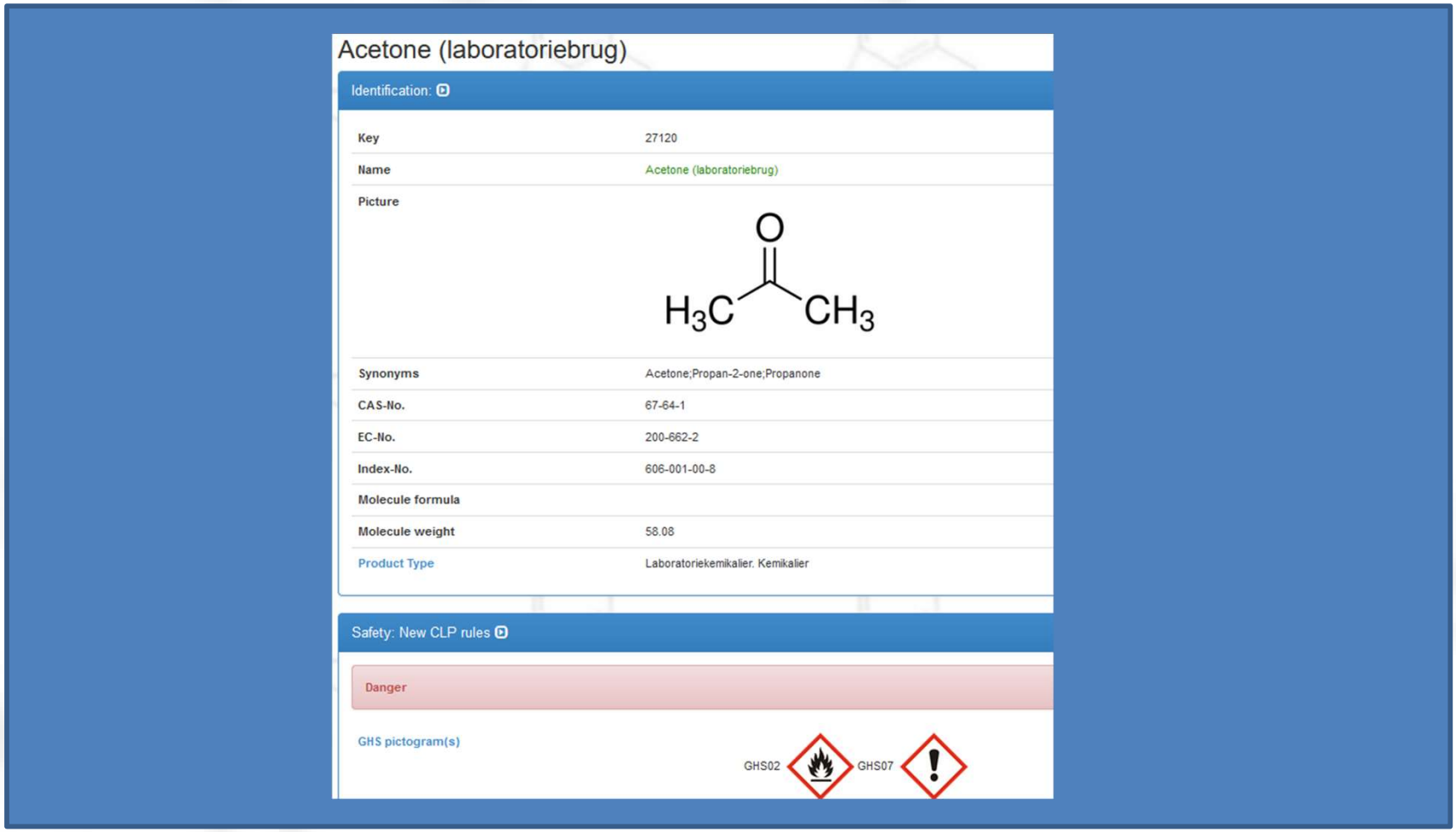
Search for chemicals (user)

- ....then in all Kiros..



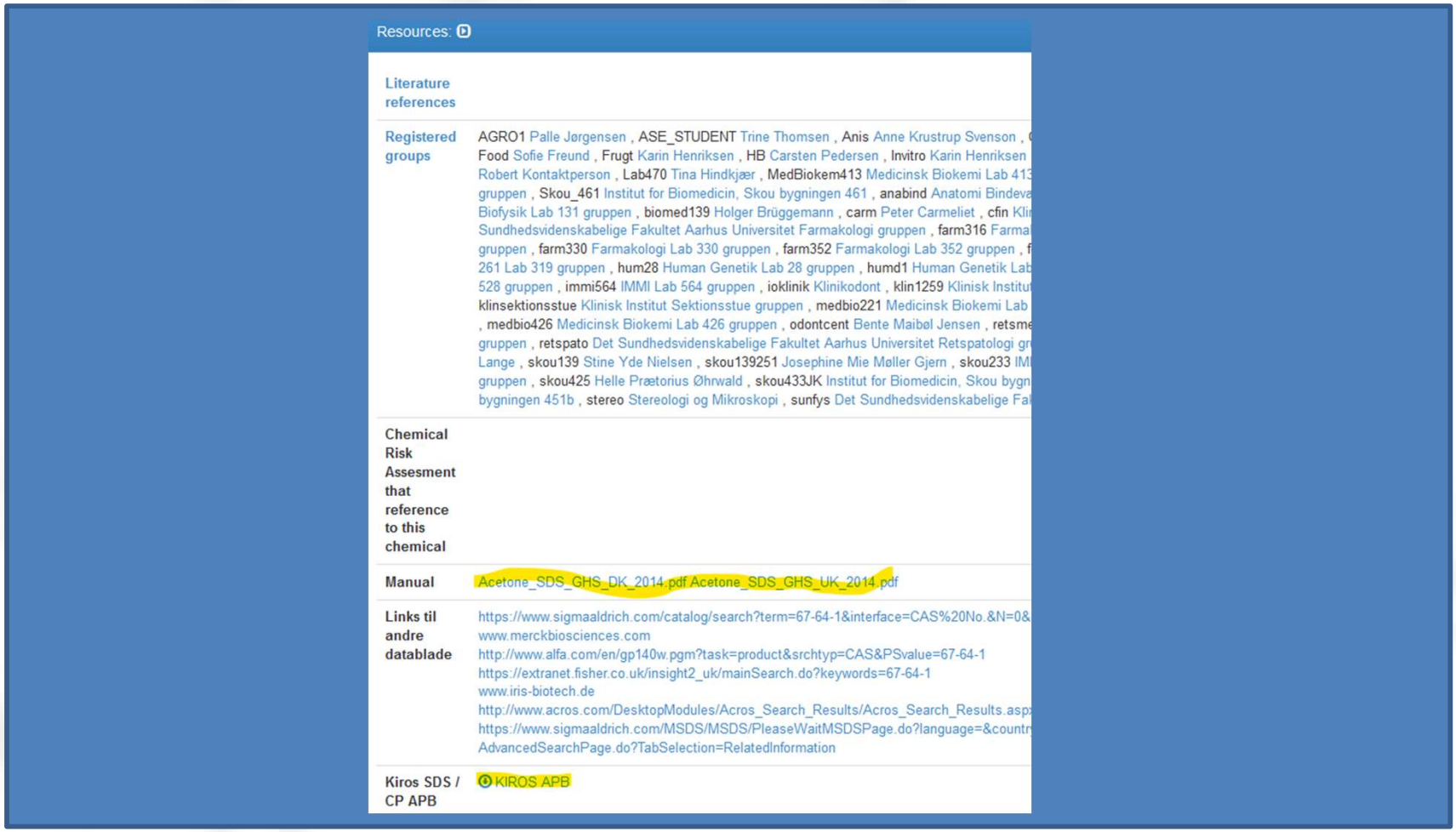
Search for chemicals (user)

- ....click leads to ”the Navigator page”



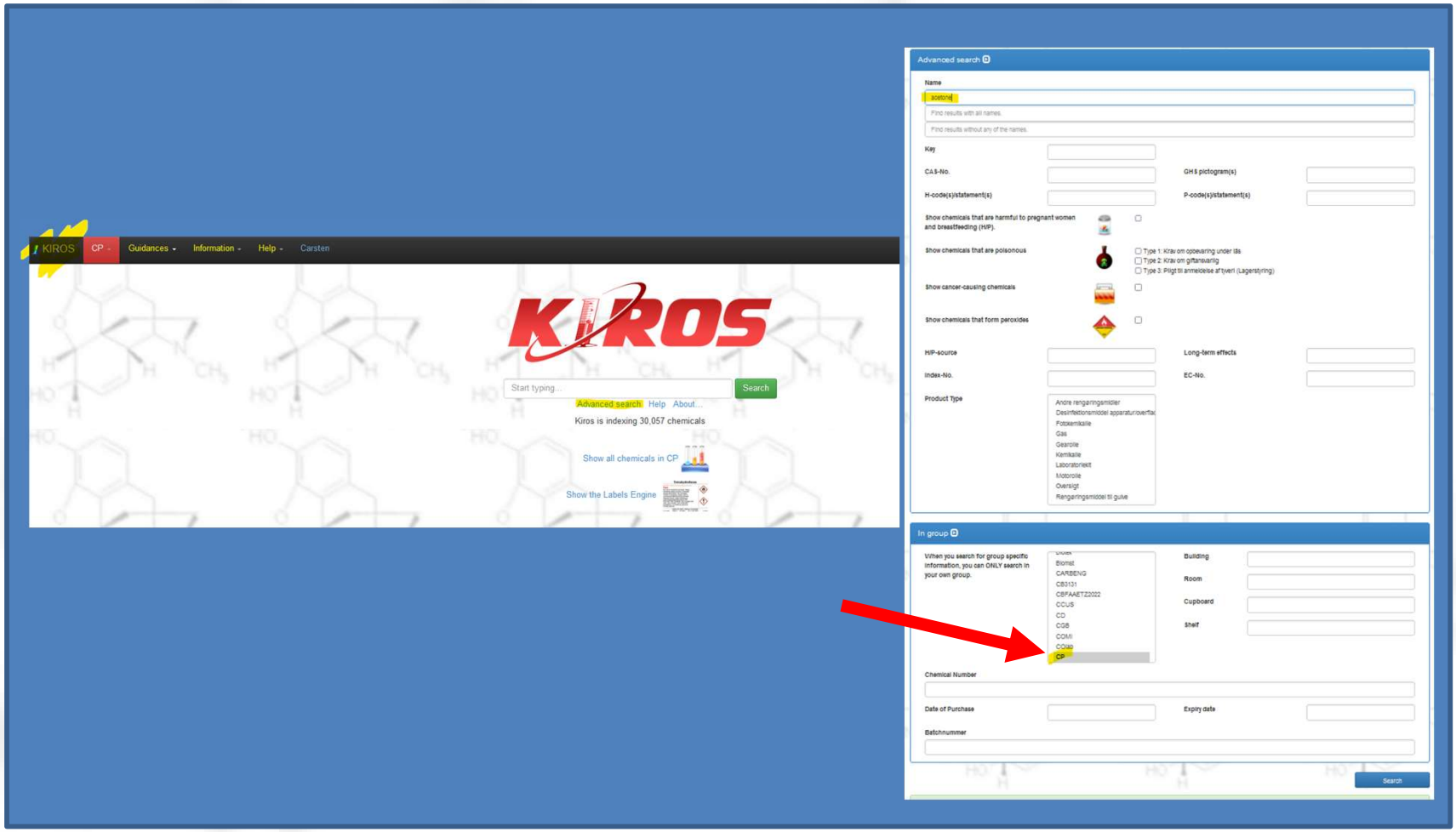
Search for chemicals (user)

- ....and at the bottom of the page you find which groups have registered this chemical and the safety data sheets..



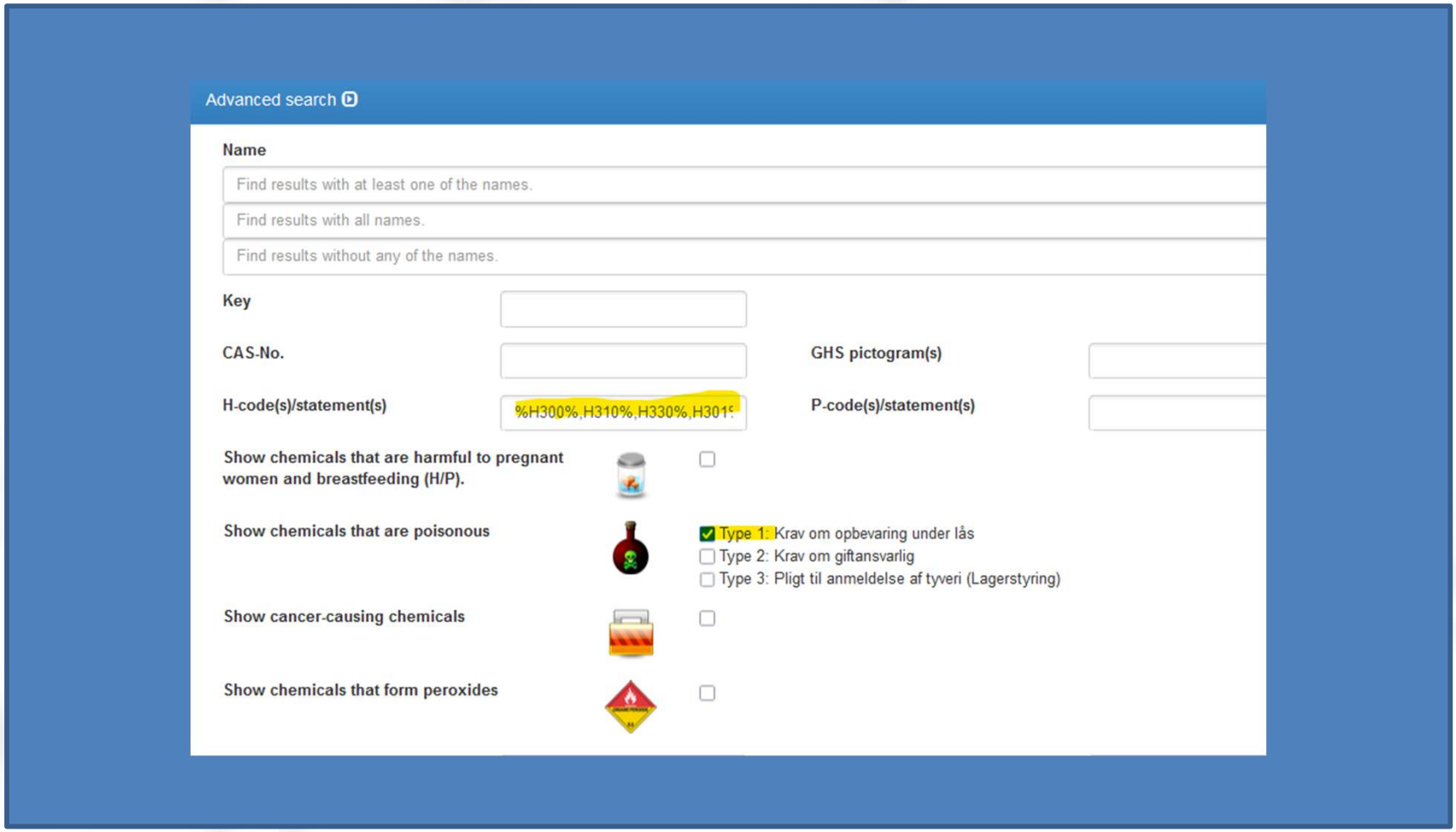
Search for chemicals (user)

- Advanced search



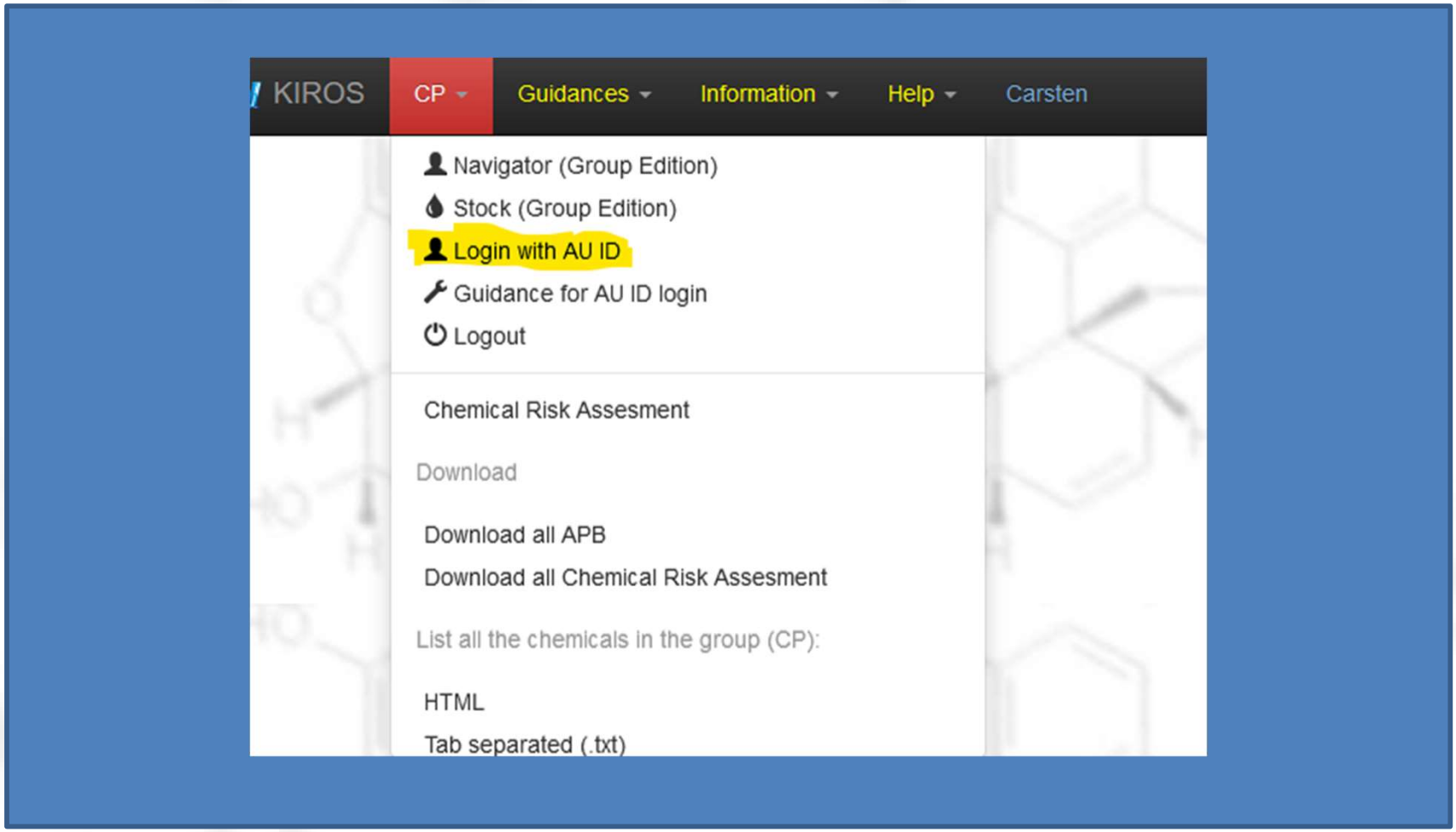
Search for chemicals (user)

- Advanced search



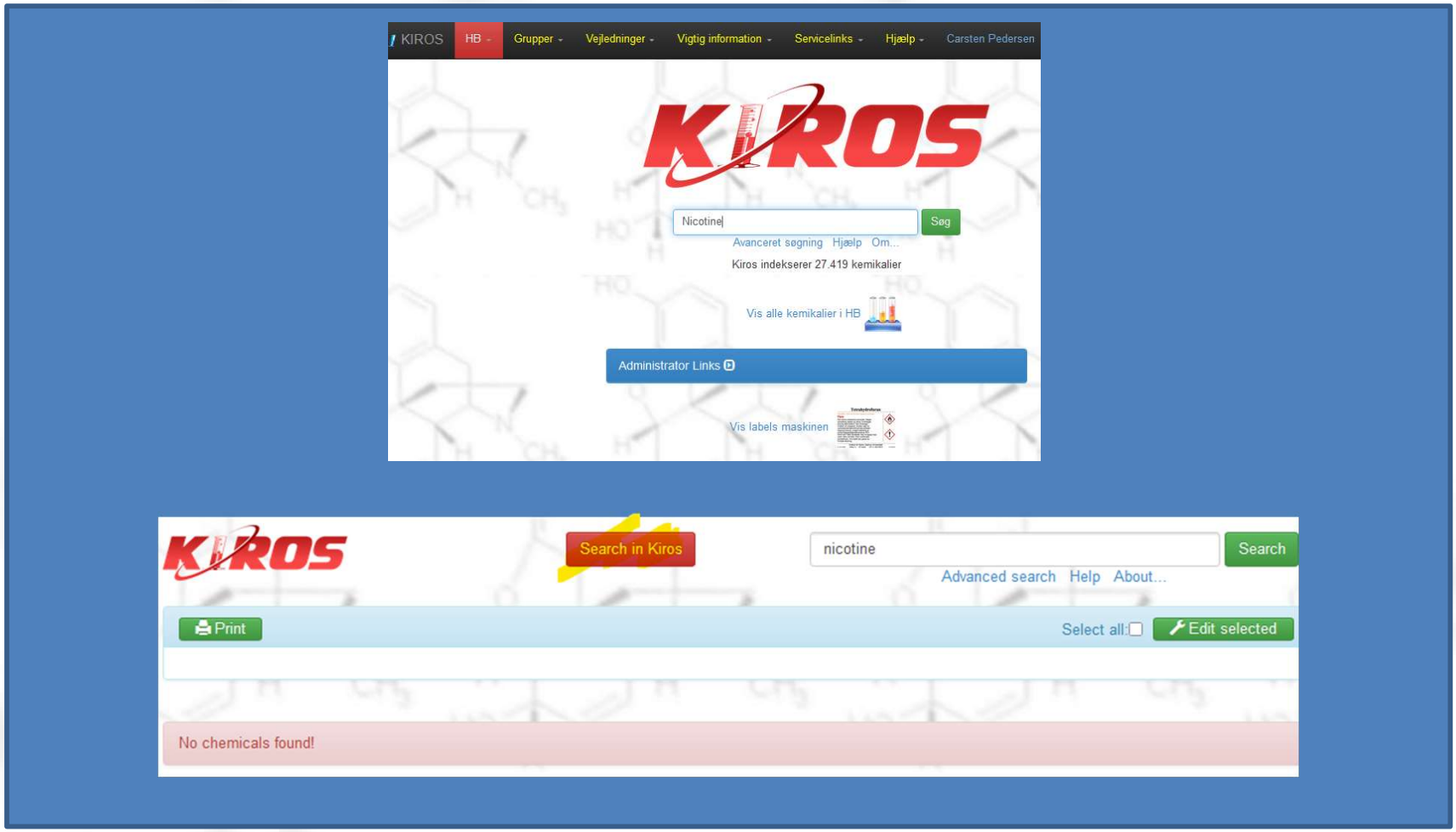
Add chemicals to your group (notifier)

- Log in with AU ID



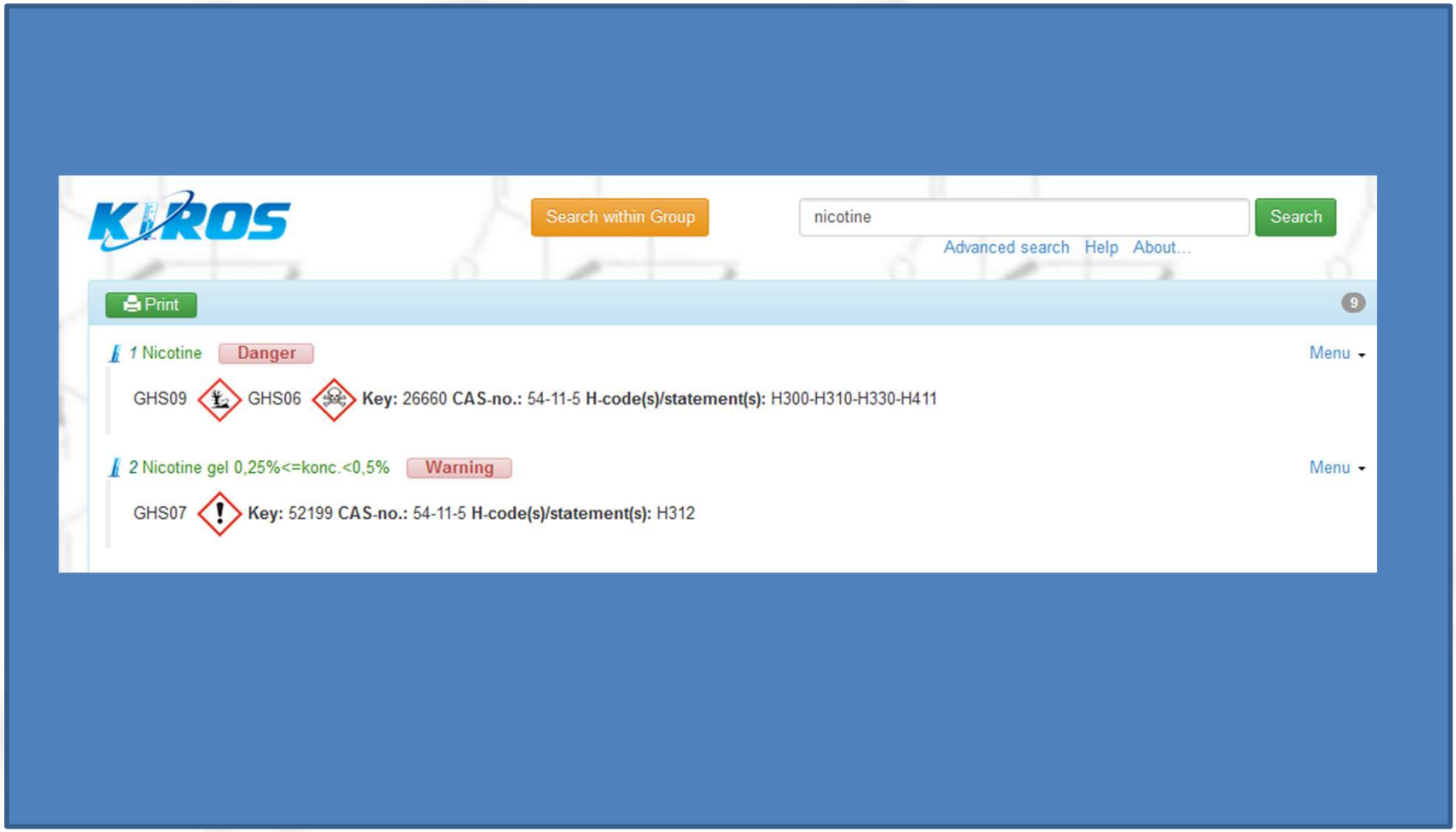
Add chemicals to your group (notifier)

- Search for chemicals in the group



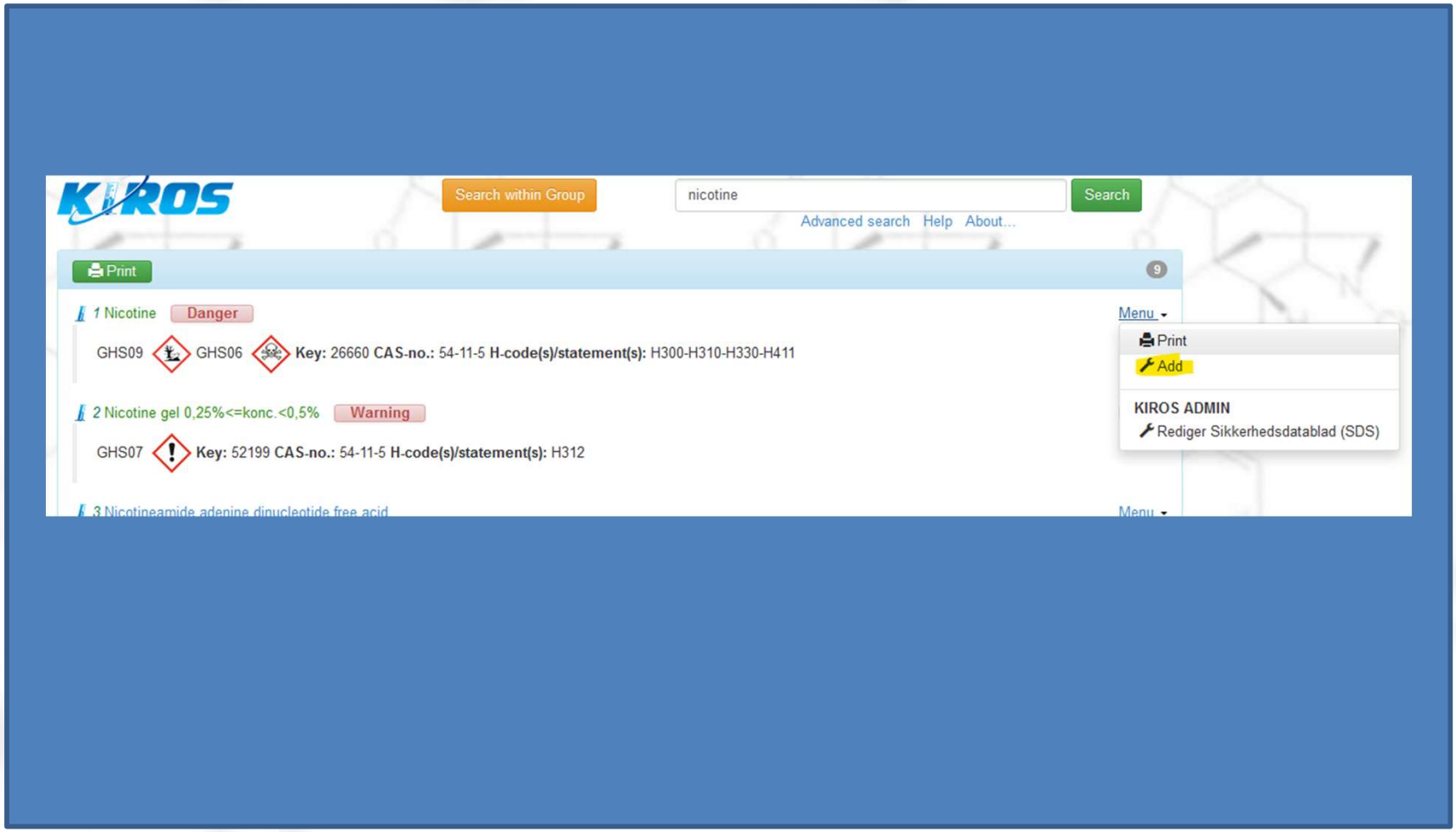
Add chemicals to your group (notifier)

- Then in all Kiros



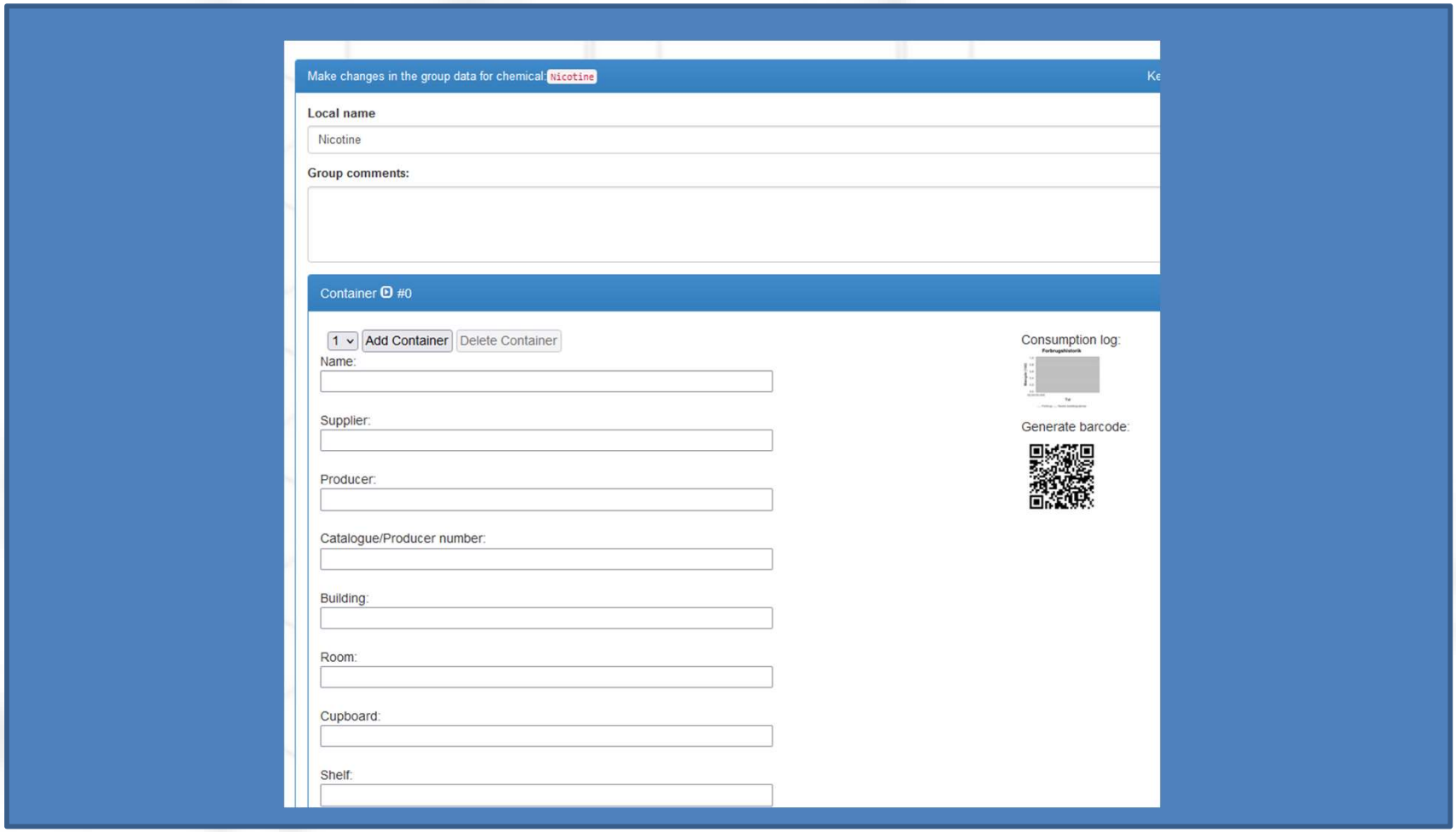
Add chemicals to your group (notifier)

- .. And choose add



Add chemicals to your group (notifier)

....Adjust name, storage, quantity...

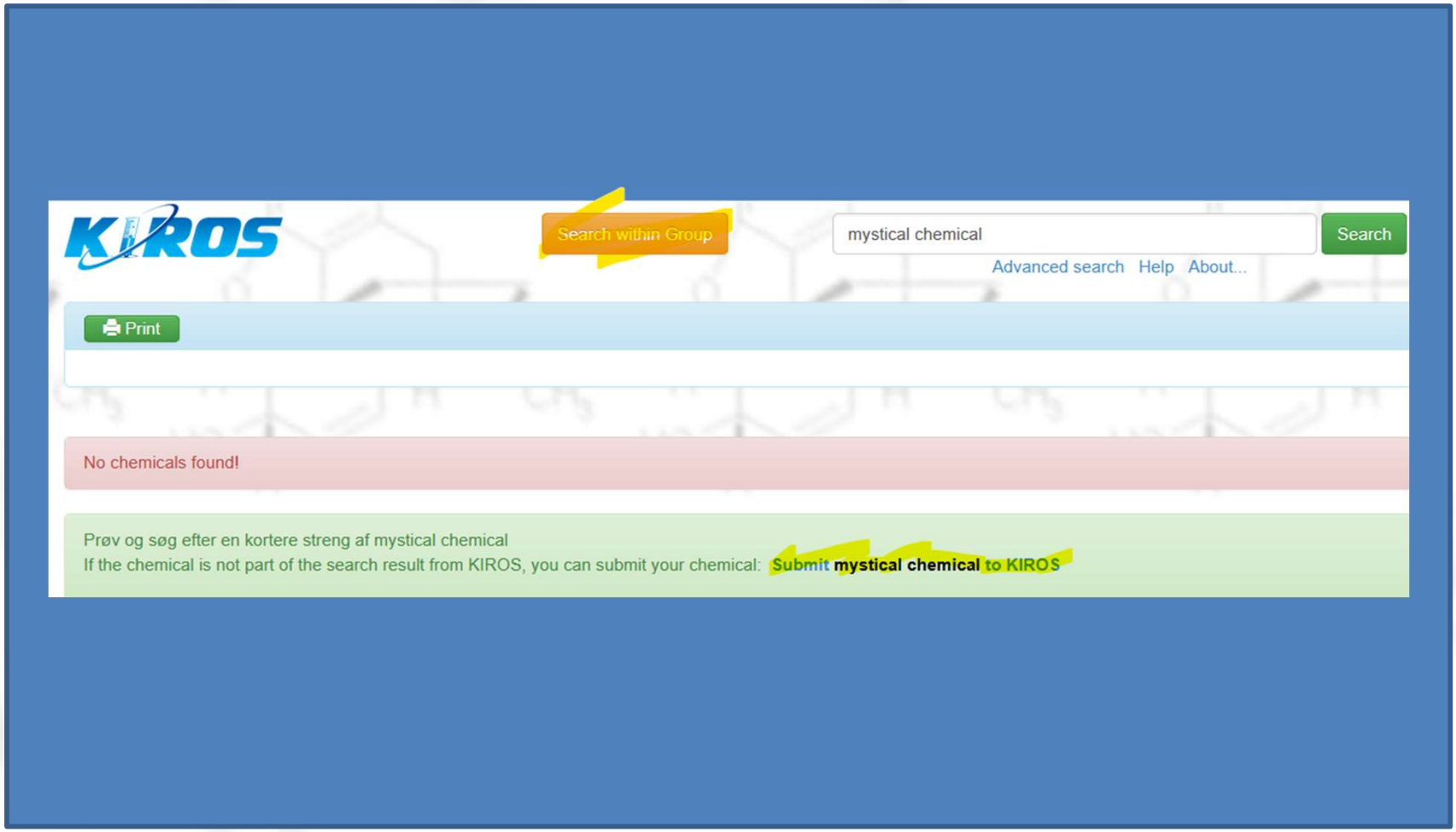


Add chemicals to your group (notifier)

- ...and press ”Save”.

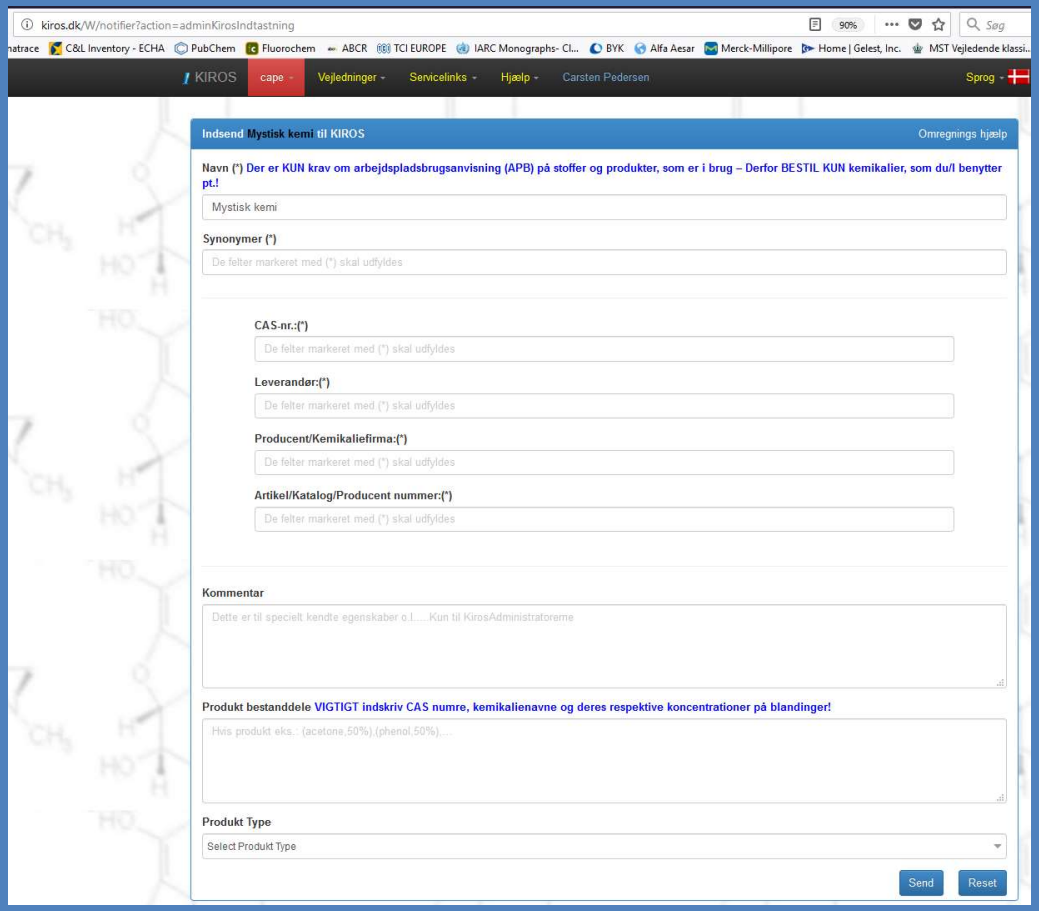
Add chemicals to your group (notifier)

- Substance not in Kiros yet? Send it in!



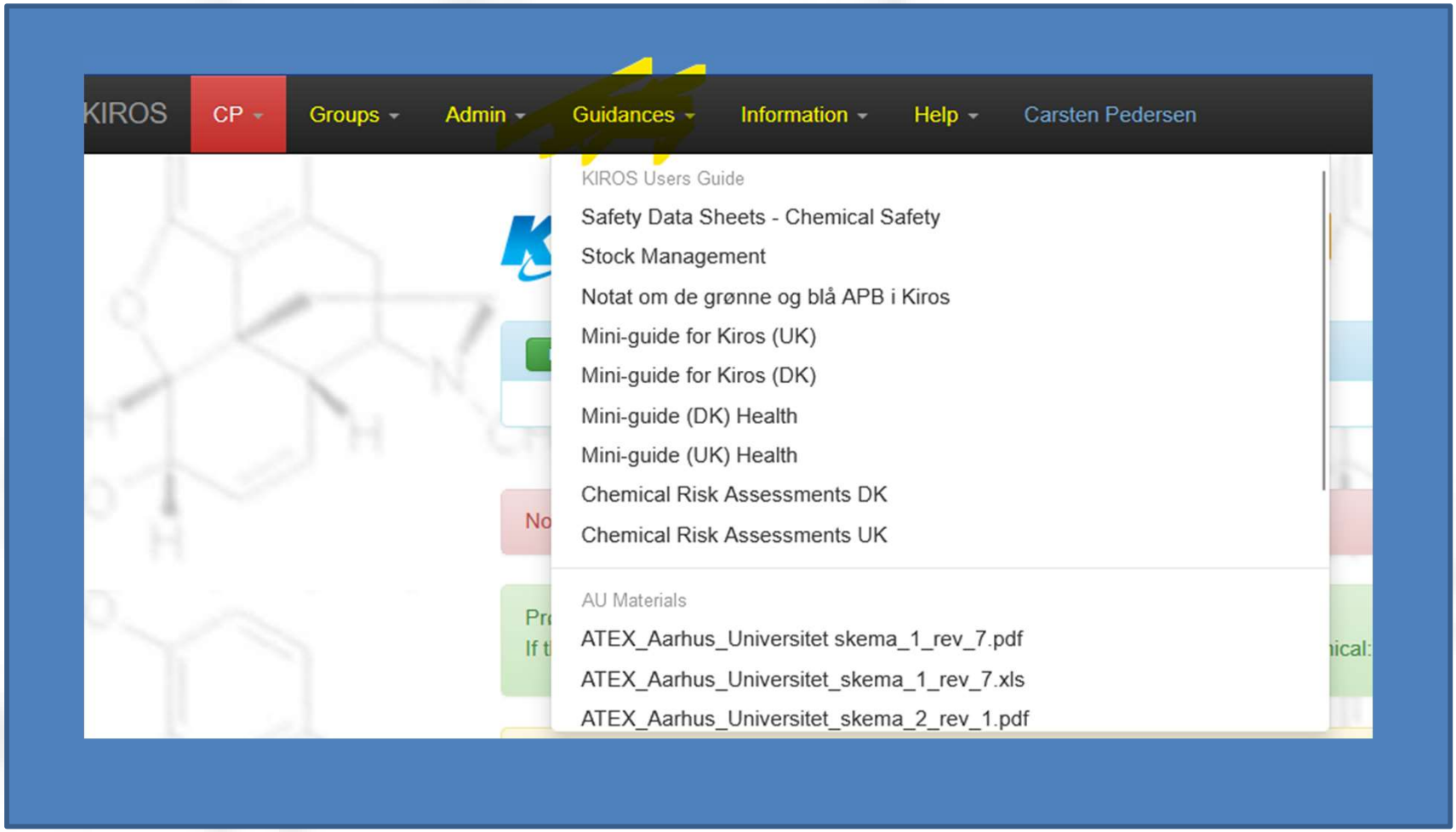
Add chemicals to your group (notifier)

- Fill in the registration formand press ”Send”



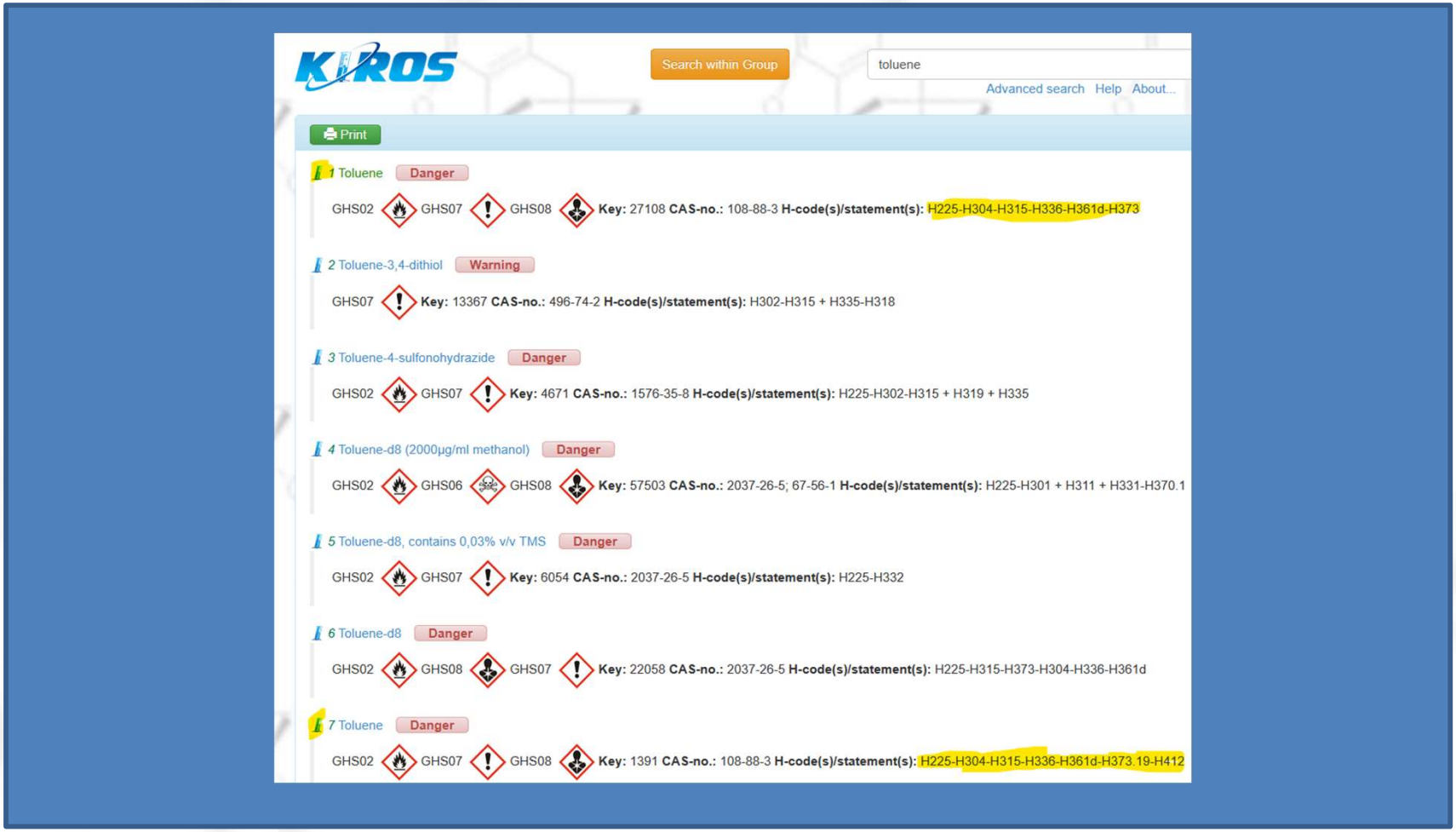
Guidance documents in Kiros

- Lots of practical info in the Kiros menu.



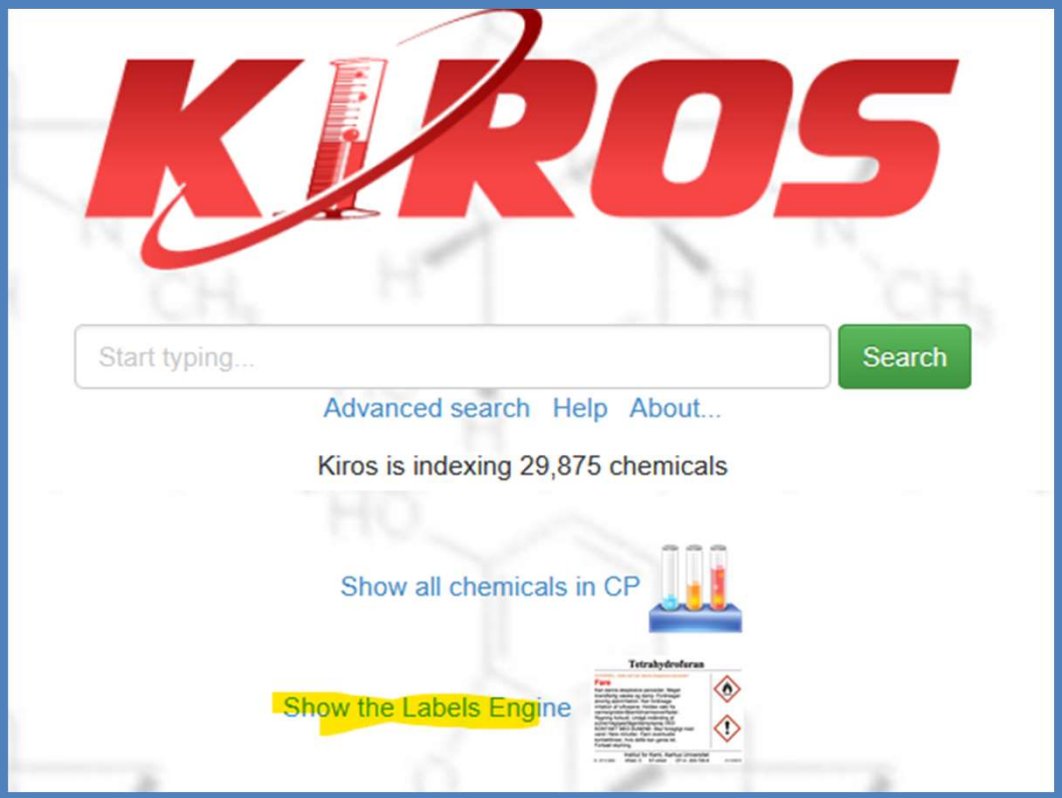
Guidance documents in Kiros

- Such as the difference between ”blue” and ”green” APB.



Printing labels in Kiros

- Can be accessed from the main menu:

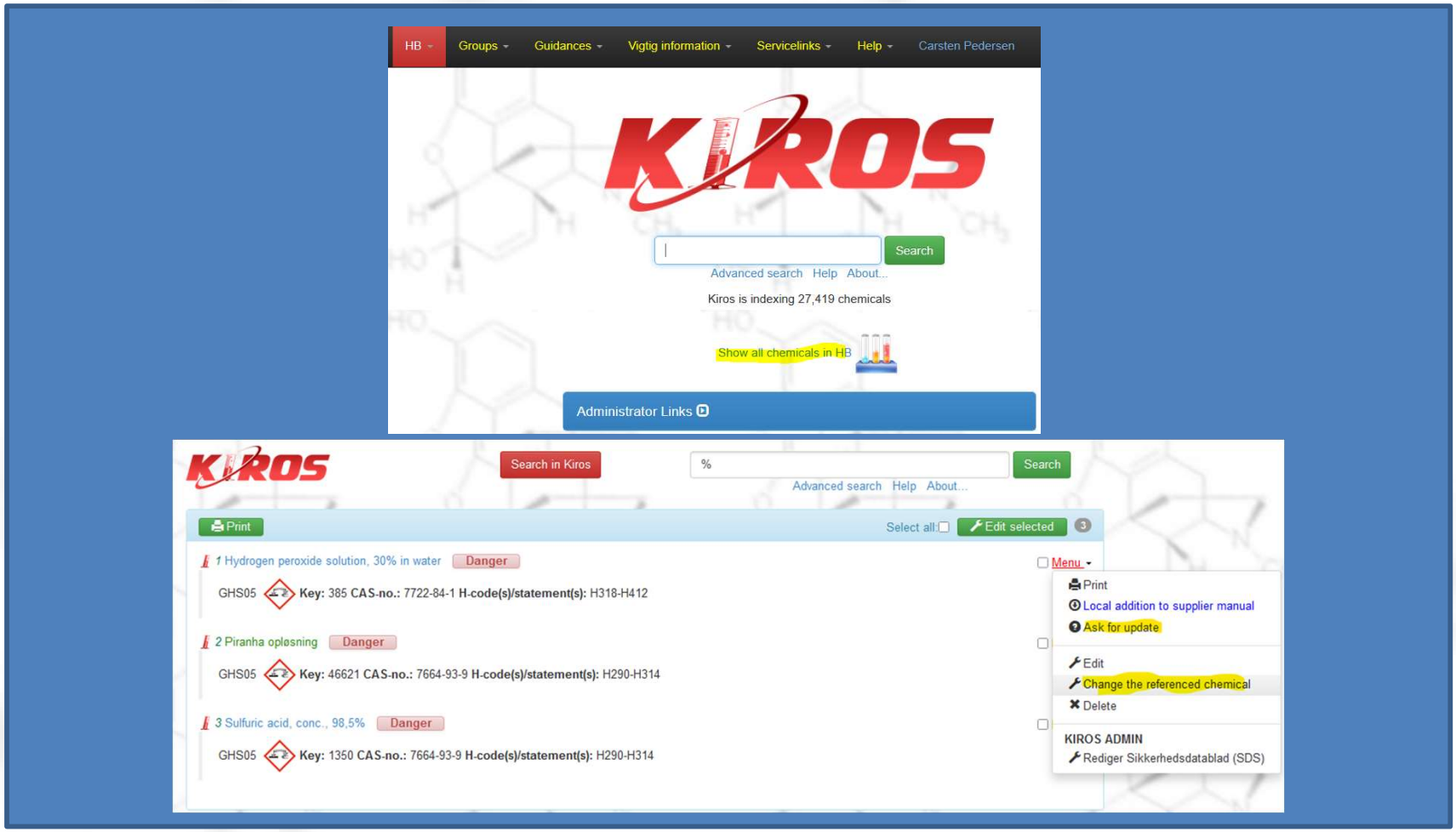


Printing labels in Kiros

- Large (x8) and small (x24) labels (helpers)

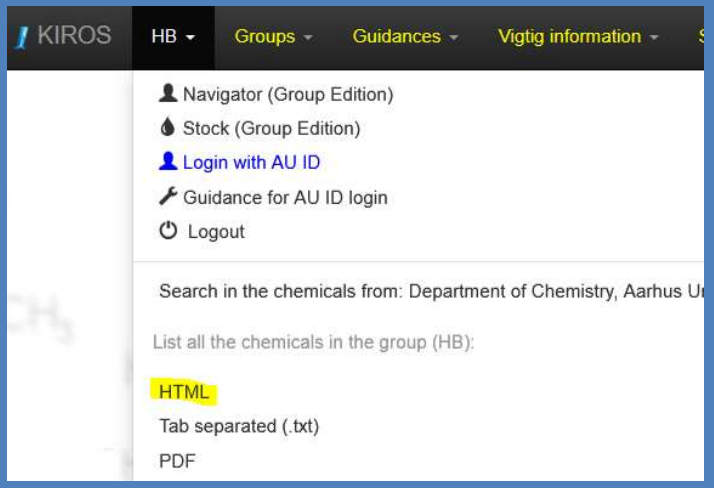
The list of chemicals (notifier)

- Edit chemicals registered in your group.



The list of chemicals (html)

- Detailed list



Key	Navn	Beholder navn	CAS-nr.	Bygning	Lokale	Skab	Hylde	Kemikalienummer
55462	5(6)-carboxyfluorescein N-hydroxysuccinimide ester		117548-22-8	1592	129	Freezer -20		
7356	Acetic acid		64-19-7	1592	129	acids		
27120	Acetone (laboratoriebrug)		67-64-1	1592	129	14		
405	Acetone-d6		666-52-4	1592 1592	129 129	Excicator Excicator		

TIllægsdatabladet

Addition to supplier manual for iNano, AU

4. First aid precautions:

5. Fire fight:

6. Precautions in case of spill and accident:

7. Handling and safekeeping:

8. Exposure control/ personal safeguard:

13. Disposal:

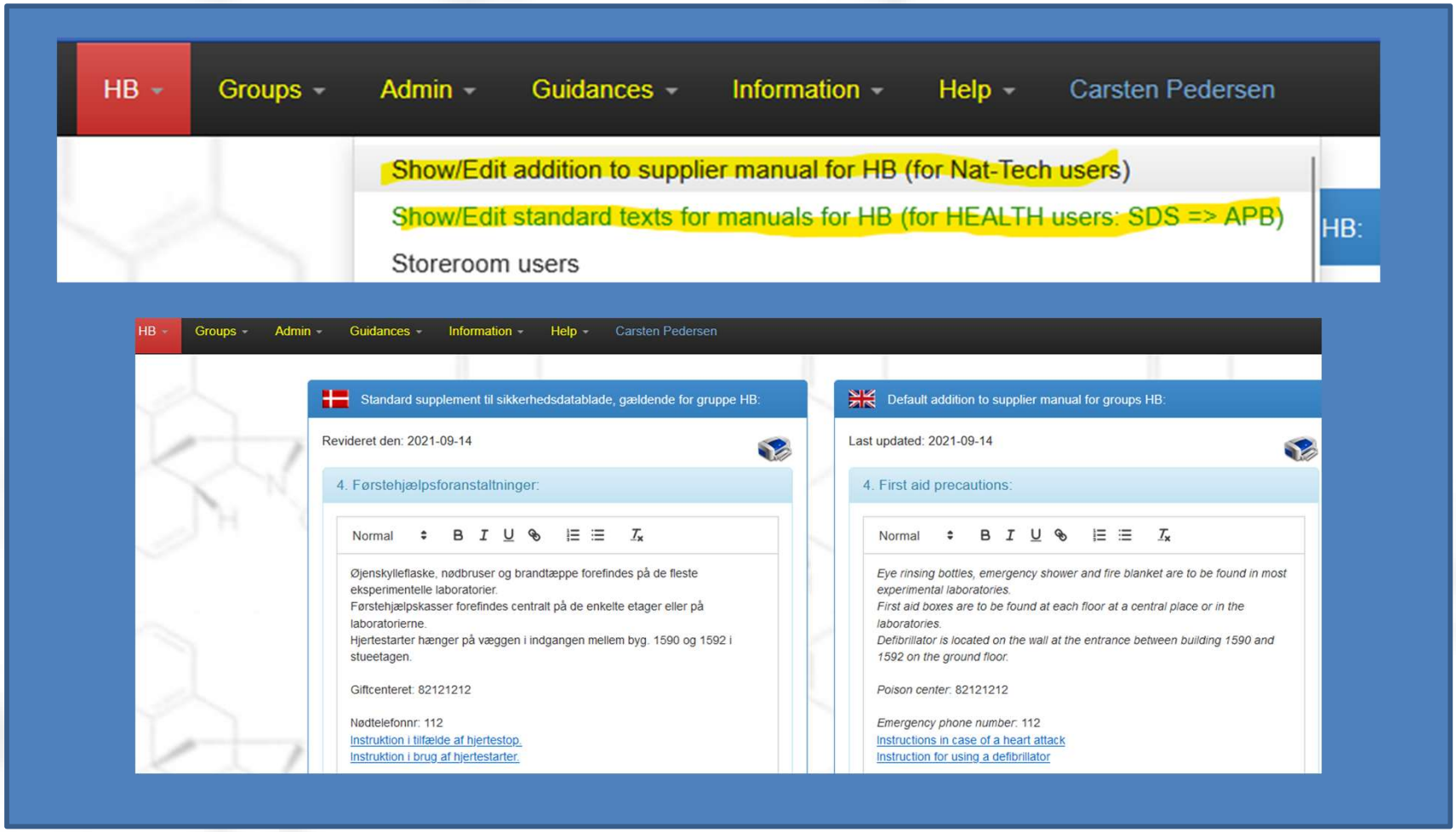
14. Transportation information:

15. Information on regulation:

16. Further information:

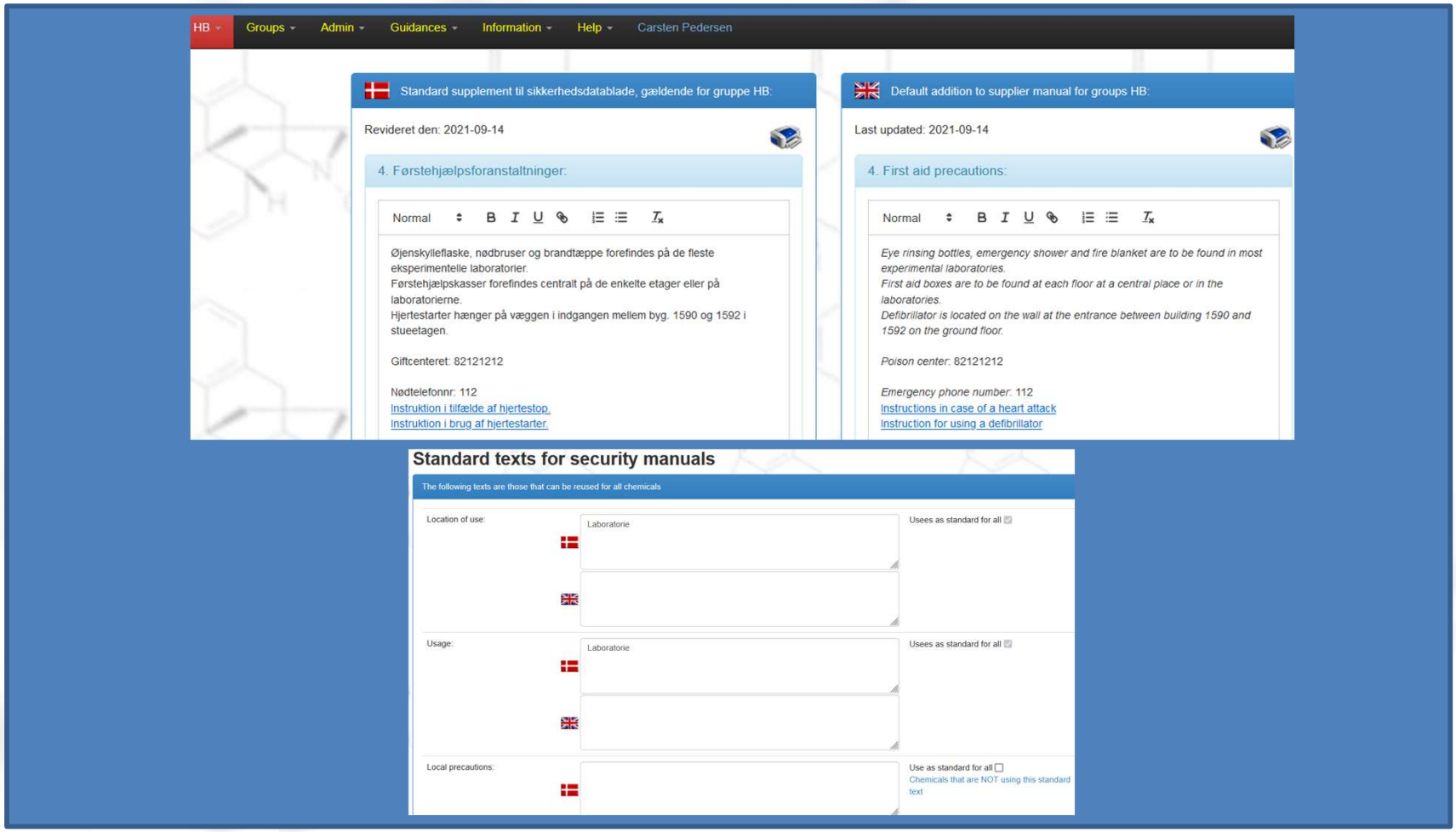
IN CASE OF ACCIDENT

- ..in the menu under ”Admin”



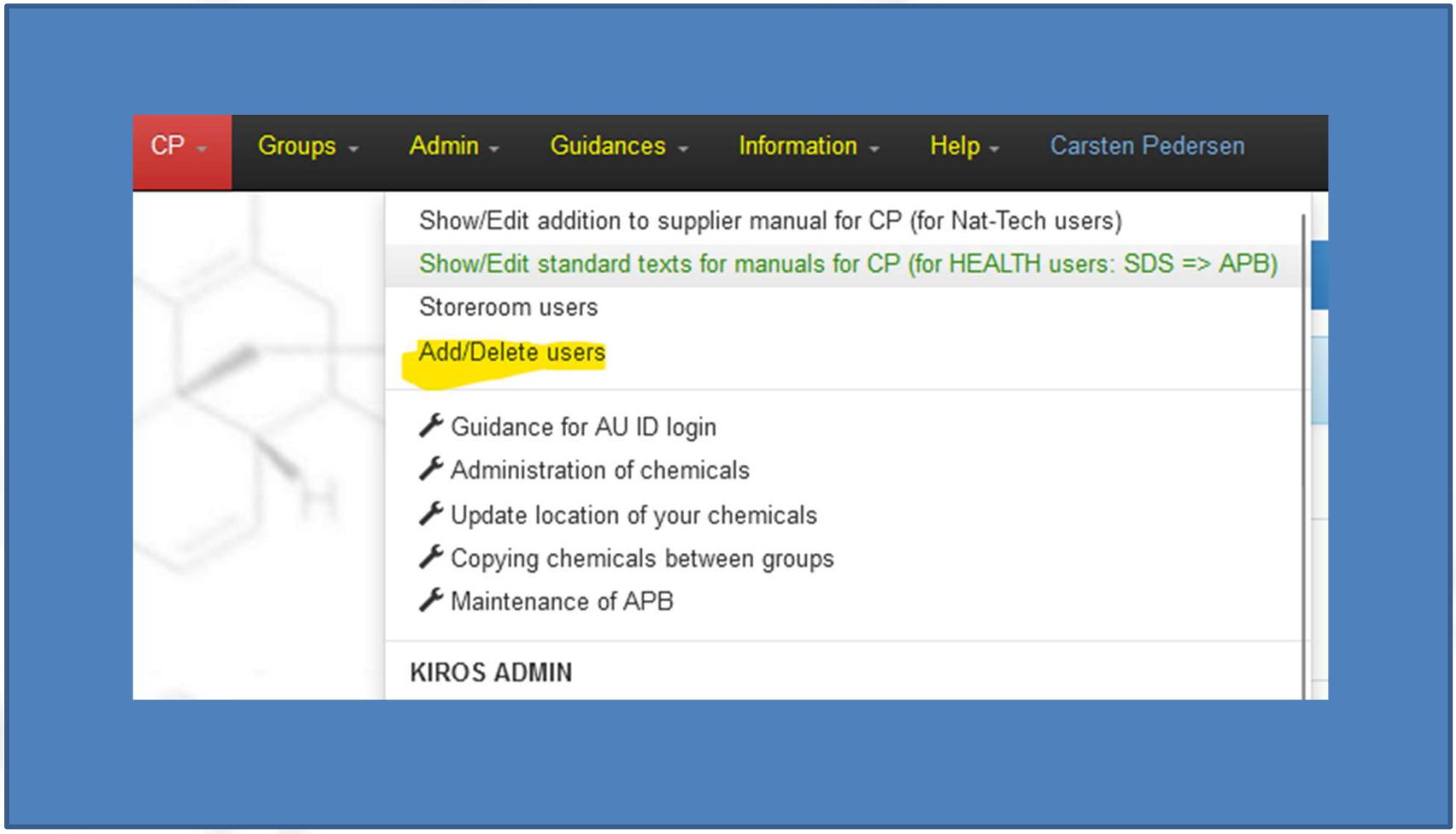
TIllægsdatabladet

- Both can be filled out.

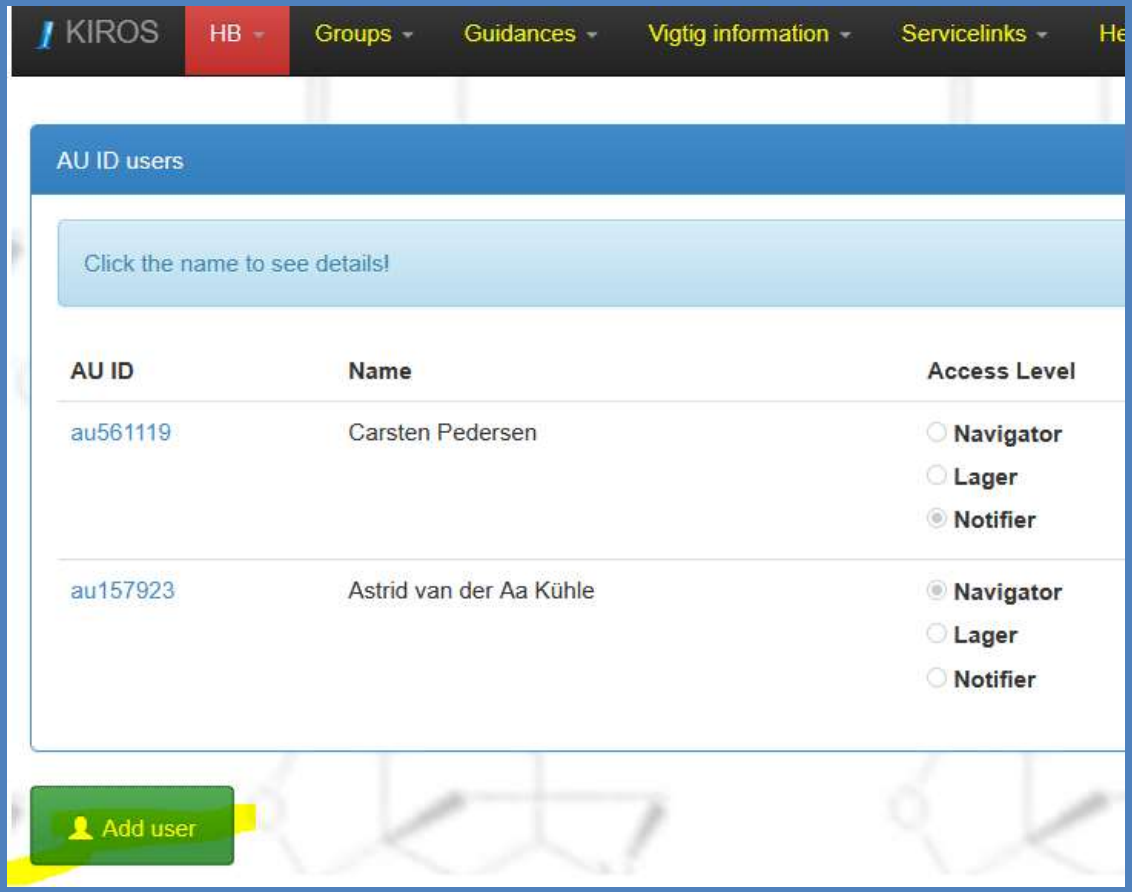


Add new users (notifier)

- ..in the menu under ”Admin”



Add new users (notifier)



Add new users (notifier)

New in Kiros !

- Easy exchange of APB reference
- Easy request for updates
- Download all the group’s SDS (offline)
- Risk assessment draft for users (navigators)

Chemical Risk Assessment

The dark side of the story reveals that Siemens Wind Power has exposed its wind turbine workers to dangerous chemicals.

The chemicals have caused the workers to develop chronic illnes such as asthma or eczema. Some have developed both.
DR News has learned this after gaining access to reports from th National Board of Industrial Injuries in Denmark.

Even though the wind turbine manufacturer's workers have bee exposed to the chemicals for years, none of them have come forward about it. But now many of them are speaking out:

More ← HAZARD PROBABILITY → Less

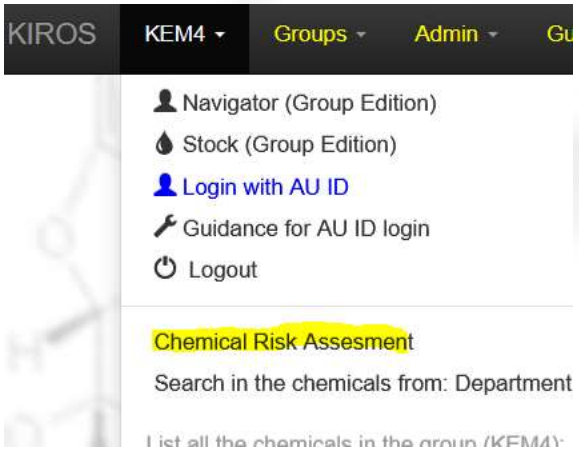
More ↑ HAZARD SEVERITY ↓ Less

	A Frequent	B Probable	C Occasional	D Remote	E Improbable
1 Catastrophic	High	High	High	High	Medium
2 Critical	High	High	High	Medium	Low
3 Marginal	High	Medium	Medium	Low	Low
4 Negligible	Medium	Low	Low	Low	Low

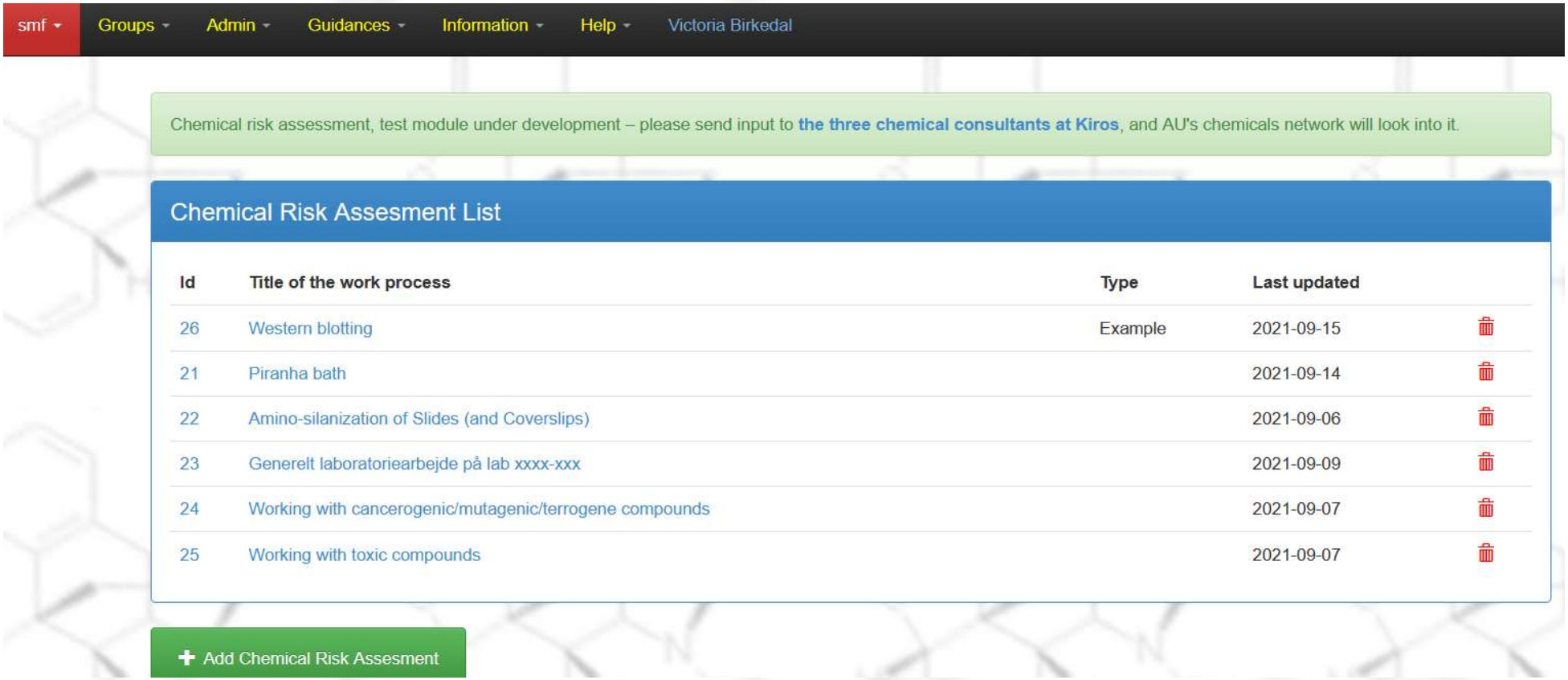
Reduce Severity and Likelihood

Chemical Risk Assessment

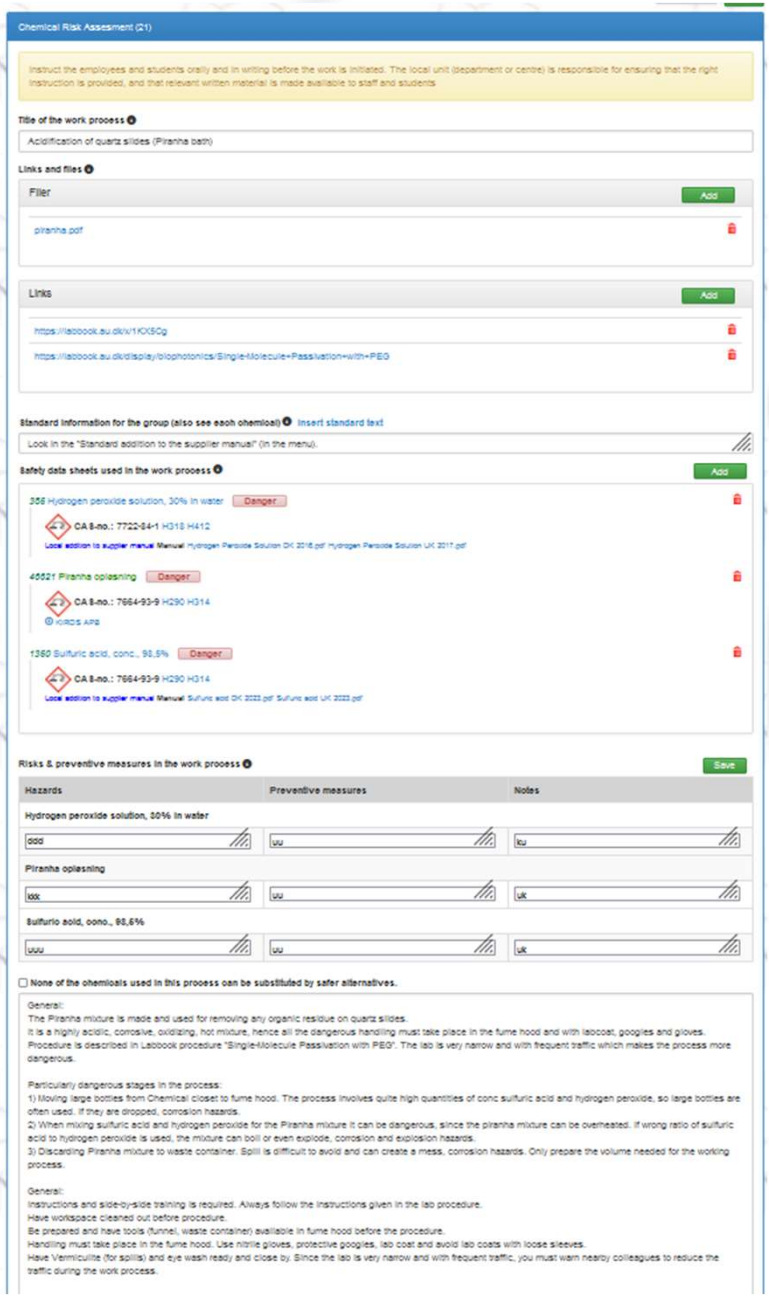
- Format is free, can be 1 line or several pages
- Which chemicals in the process?
- Hazards related to usage (incl quantities, frequency)
- Route of exposure
- Mandatory safety gear, instruction
- Conclusion – is it safe?
- Action plan (if needed)



Chemical Risk Assessment



Chemical Risk Assessment



Chemical Risk Assesment (21)

Instruct the employees and students orally and in writing before the work is initiated. The local unit (department or centre) is responsible for ensuring that the right instruction is provided, and that relevant written material is made available to staff and students

Title of the work process

Acidification of quartz slides (Piranha bath)

Links and files

Filer — Add

piranha.pdf

Links — Add

https://labbook.au.dk/v1/KX5Cg

https://labbook.au.dk/d/display/biophotonics/Single-Molecule+Passivation+with+PEG

Standard information for the group (also see each chemical) Insert standard text

Look in the "Standard addition to the supplier manual" (in the menu).

Safety data sheets used in the work process — Add

356 Hydrogen peroxide solution, 30% in water — Danger

CA 8-no.: 7722-84-1 H318 H412

Local addition to supplier manual Manual Hydrogen Peroxide Solution DK 2016.pdf Hydrogen Peroxide Solution UK 2017.pdf

45621 Piranha opløsning — Danger

CA 8-no.: 7664-93-9 H290 H314

KIRO'S APS

1360 Sulfuric acid, conc., 98.5% — Danger

CA 8-no.: 7664-93-9 H290 H314

Local addition to supplier manual Manual Sulfuric acid DK 2022.pdf Sulfuric acid UK 2022.pdf

Risks & preventive measures in the work process — Save

Hazards	Preventive measures	Notes
Hydrogen peroxide solution, 30% in water		
ddd	uu	ku
Piranha opløsning		
kkk	uu	uk
Sulfuric acid, conc., 98,6%		
uuu	uu	uk

☐ None of the chemicals used in this process can be substituted by safer alternatives.

General:
The Piranha mixture is made and used for removing any organic residue on quartz slides.
It is a highly acidic, corrosive, oxidizing, hot mixture, hence all the dangerous handling must take place in the fume hood and with labcoat, googles and gloves.
Procedure is described in Labbook procedure "Single-Molecule Passivation with PEG". The lab is very narrow and with frequent traffic which makes the process more dangerous.

Particularly dangerous stages in the process:
1) Moving large bottles from Chemical closet to fume hood. The process involves quite high quantities of conc sulfuric acid and hydrogen peroxide, so large bottles are often used. If they are dropped, corrosion hazards.
2) When mixing sulfuric acid and hydrogen peroxide for the Piranha mixture it can be dangerous, since the piranha mixture can be overheated. If wrong ratio of sulfuric acid to hydrogen peroxide is used, the mixture can boil or even explode, corrosion and explosion hazards.
3) Discarding Piranha mixture to waste container. Spill is difficult to avoid and can create a mess, corrosion hazards. Only prepare the volume needed for the working process.

General:
Instructions and side-by-side training is required. Always follow the instructions given in the lab procedure.
Have workspace cleaned out before procedure.
Be prepared and have tools (funnel, waste container) available in fume hood before the procedure.
Handling must take place in the fume hood. Use nitrile gloves, protective goggles, lab coat and avoid lab coats with loose sleeves.
Have Vermiculite (for spills) and eye wash ready and close by. Since the lab is very narrow and with frequent traffic, you must warn nearby colleagues to reduce the traffic during the work process.

Toxic compounds

- There are special rules for use of toxic compounds. (klassificeringsbekendtgørelsen, MST rules)
- Toxic substances or H370 (>125mL) or CMR cat 1.


- Store locked up. Poison responsable who ensures correct storage. Warning sign on poisons locker/lab.
- List available in Kiros.
- Tox cat 1-3: theft must be reported

Carcinogenic substances

- There are special rules for the use and labelling of CMR substances and waste
- All substances/mixtures with:

  >0,1% Carcinogenic or mutagenic cat 1 (CM)
  >0,3% Toxic to reproduction (R)
  >1% Carcinogenic cat 2

- For instance, THF and TiO2 (powder <10µm) H351
- List available in Kiros

Cancinogenic substances

»Indeholder et stof, der er omfattet af dansk arbejdsmiljøregulering med hensyn til kræftrisiko«.

- Extra attention to the complete elimination of exposure. Consider your process.
- Use fumehood/glove box
- If exposure cannot be eliminated or by accidents, users must be registered and the info kept for 40 years
- §20 substances has particular attention – only use in closed systems
- Avoid that substances spread in your lab (clean workspace, regular lab coat wash)

Pregnant and breastfeeding

- Special attention to exposure concerning some classifications and types of chemicals (toxic, organic solvents, endocrine disruptors, cancerogenic etc)
- 1/10 GV (fetus special/unknown effects)
- Also heavy lifting, cold/warm work environment, radiation etc.
- AT guidance: at.dk/regler/at-vejledninger/gravides-ammendes-arbejdsmiljoe-a-1-8/
- List available in Kiros

Explosives precursors

- EU regulation 2019/1148 in effect 1. feb 2021
- H2O2 (12%), nitric acid (3%), ammonium nitrate, conc sulphoric acid (15%), perchlorates control&notification. Also metalpowders, acetone, other nitrates notification.
- Suppliers must get costumer declarations and ask for ID (for instance drivers license)
- Supplier must store info on transactions for 18 months.
- Notification within 24 h if theft is suspected!

Chemical Risk Assessment Exercise

- Log into the Kiros group CP with AU-ID
- Read the procedure “Single-molecule…” step “Acidification of quartz slides (Piranha.pdf)”
- The piranha mixture is described in Wikipedia:
  https://en.wikipedia.org/wiki/Piranha_solution
- Create a Risk Assessment draft and name it with your au id
- Load the necessary chemicals into it
- Decide if you want to risk assess each chemical or the overall process. Or both. Fill out the corresponding tabs.

! Assume a crowded lab
! Assume this is a repeated process
! Assume grad level training

? Any chronical hazards (allergy/CMR)
? What are the main risks