

SAFETY

MASTER THESES 2021-2022

Sebastian Verhelst



WHY ARE WE PRESENTING THIS?

- Our work involves risks
 - Machines
 - Fuels, gases, refrigerants
 - ...
- implying:
 - Rotating parts
 - High pressure or temperature
 - Phase changes
 - Toxic components
 - ...
- And we have had some close calls & some accidents!



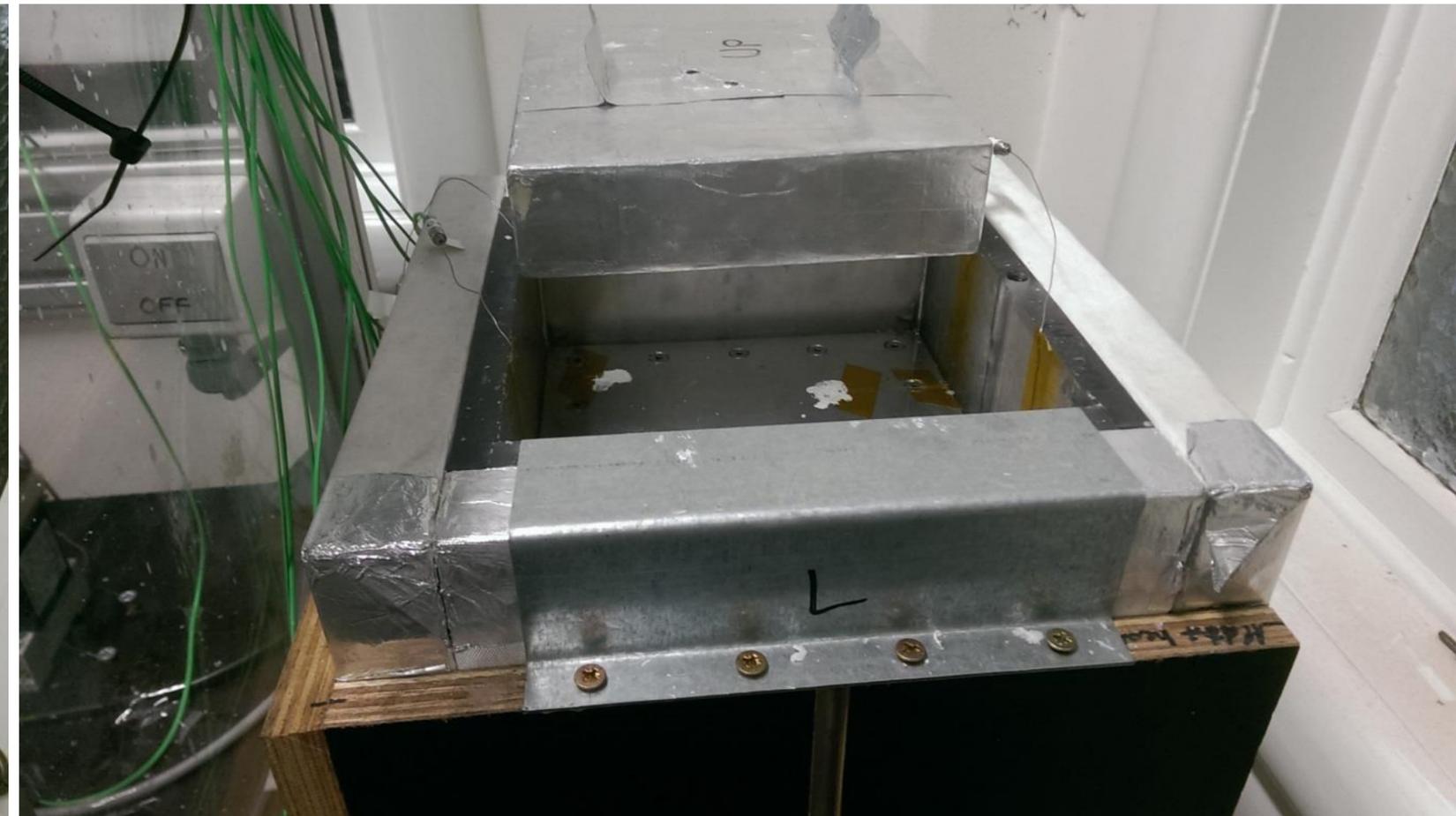
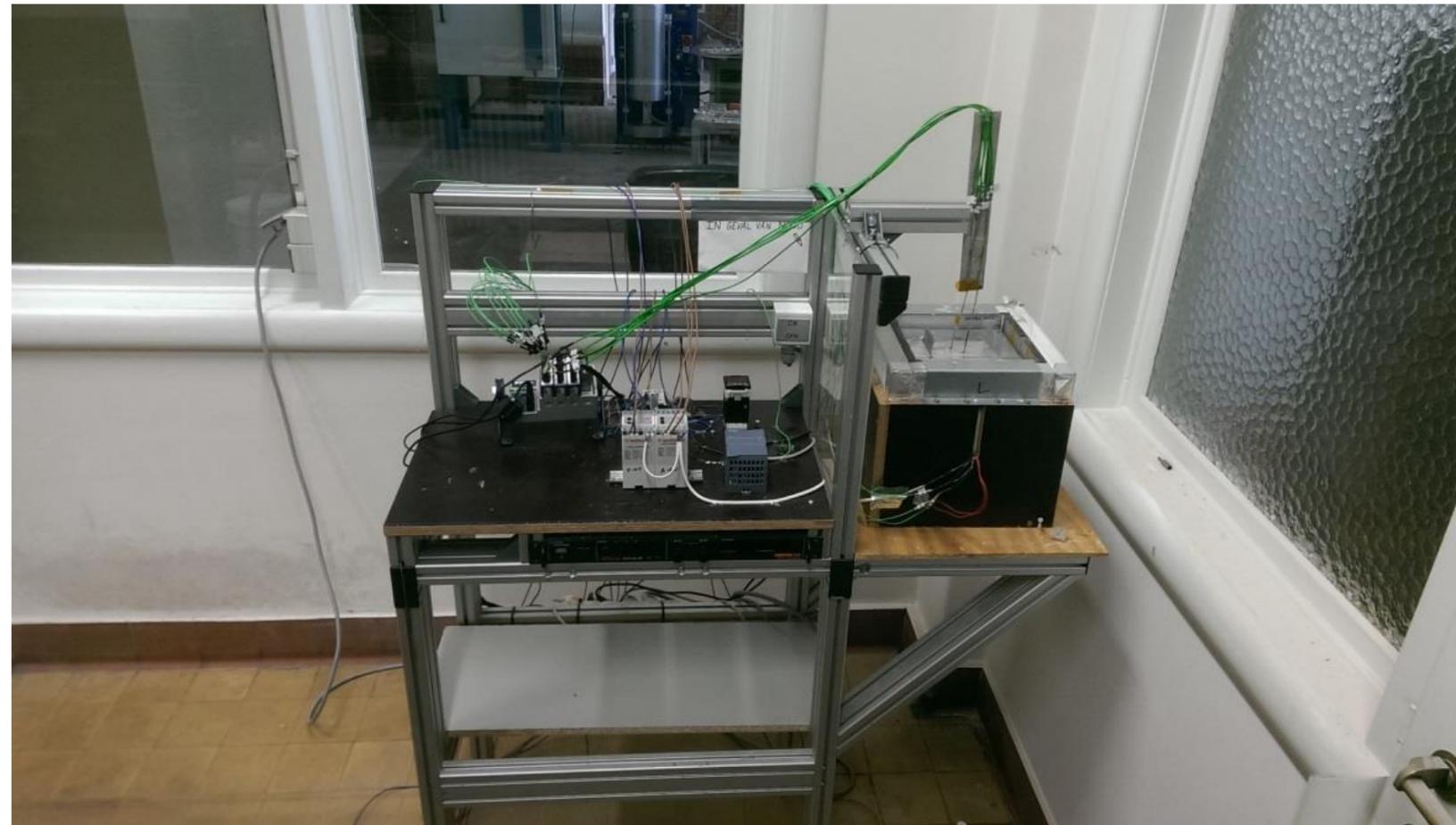
GUCCI EXPERIENCE



HOW NOT TO... STORE GASOLINE



METAL FOAMS AS PCM MATRIX: MOLTEN PARAFFIN IS HOT!



OTHER EXAMPLES, WITHOUT IMAGES...

- How not to remove an injector / pressure sensor / ...
(GUCCI, Audi, ...)
- Always remember to tighten connections
(GUCCI, CFR HFM, Audi pressure sensor, ...)
- Make sure a heater can dissipate its heat (CFR HCCI, ...)
- Don't use a torque wrench as a baseball bat
- ...

(stories behind these: ask us at BBQ in June!)

Most setups: training required. Unsure about something: ask!

CONTENTS

- Basics
- Personal protection
- Zoning
- Documenting
- Welding tools
- Practical agreements

SAFETY = DEALING WITH RISKS

For every setup, a risk assessment must be done.
Once the risks are listed, the options are:

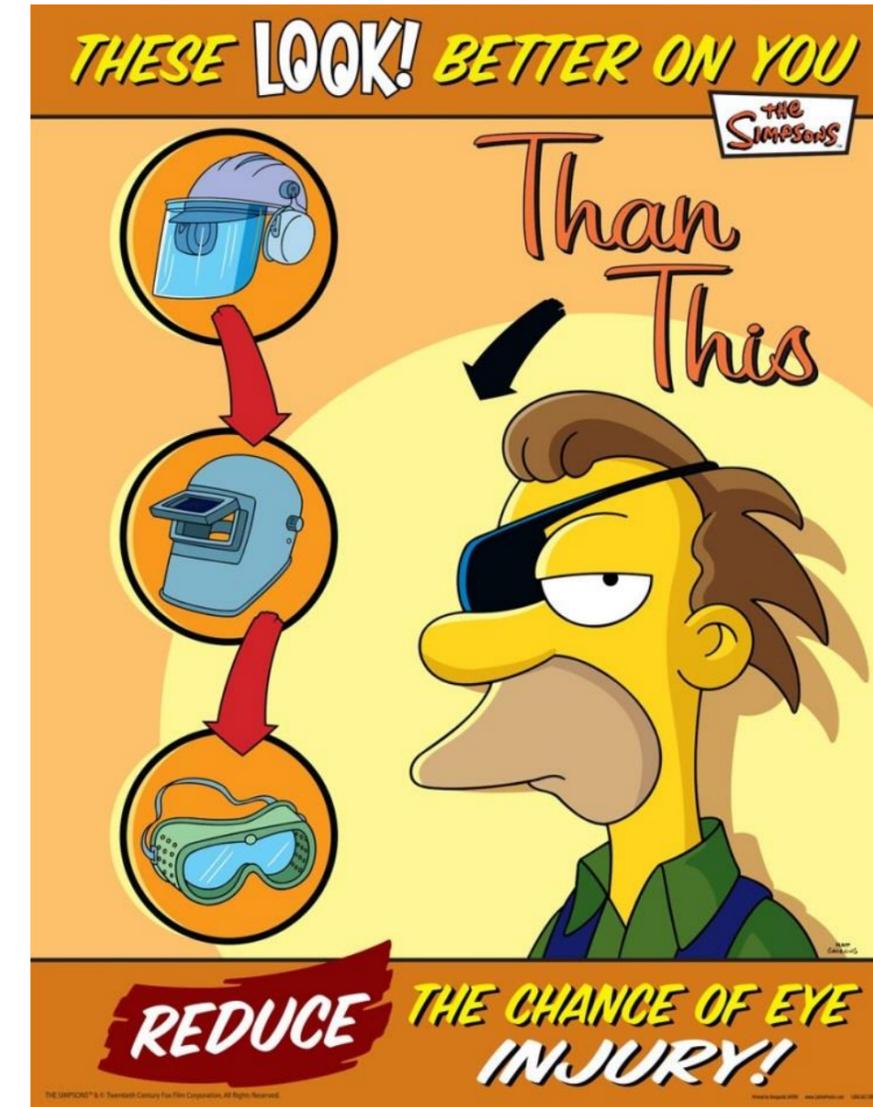
1. Remove the risk
2. If that's not possible: contain the risk, and
3. Protect the user: use personal protection, and
4. Make agreements and manuals

1st agreement:

**you are never to work on a set-up when you're alone –
always make sure someone is around and knows you're there!**

PERSONAL PROTECTION EQUIPMENT (“PBM”)

- Glasses
- Gloves
- Safety shoes → not provided by us
- Long sleeves and legs
 - Lab vest! Contact fgmarten.martens@UGent.be to get one (+deposit)
 - Lab access only allowed with vest!
- Gas mask: store in plastic bag after use (lifetime active carbon)

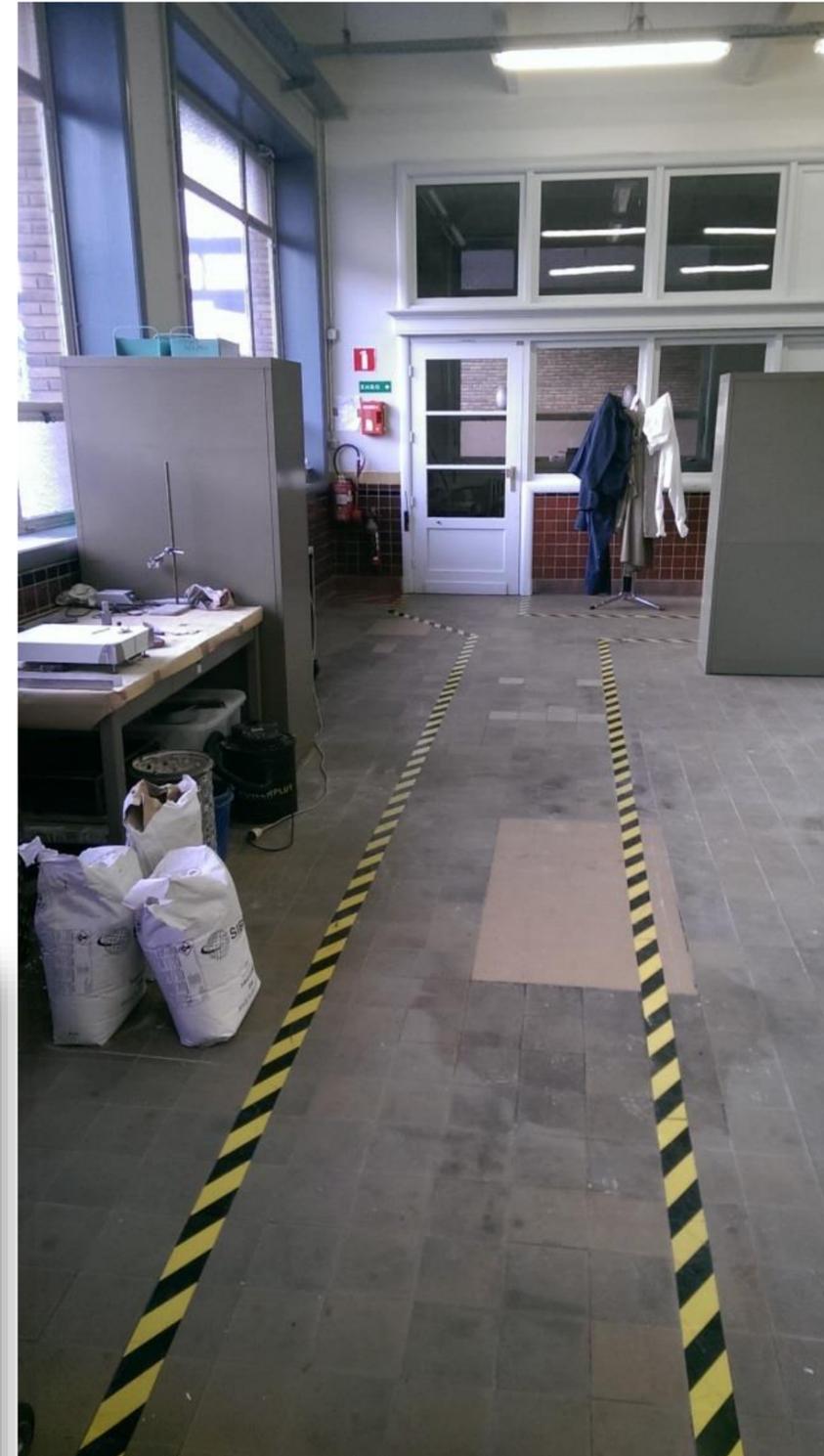


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USE THE WALKWAYS – AND KEEP THEM CLEAR

- Shaded red = keep clear at all times



TEST SET-UPS

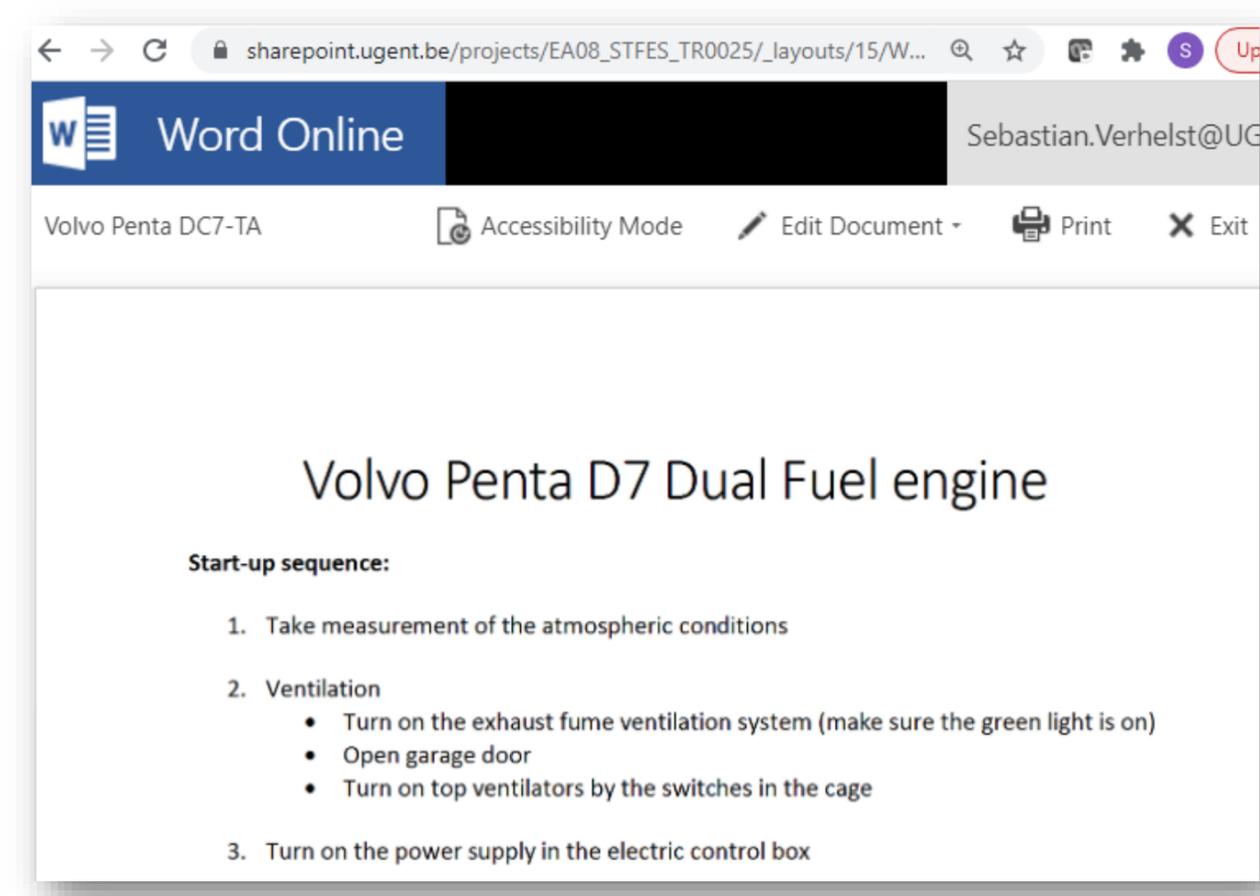
- Perimeter marked on floor (blue tape)
 - Only authorized personnel allowed within perimeter
 - i.e.: you in “your” set-up, keep out of other set-ups
- Keep dedicated equipment with set-up

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DOCUMENTING

- All set-ups should have
 - A manual (e.g. start procedure)
 - A logbook, e.g.:
 - 12/03/2014: replaced sensor XX by XY
 - 13/03/2014: tried measurements but failed because of ...
 - Date – operator – “what” – comments (problems, actions)
- See [SharePoint site](#) of your set-up



The screenshot shows an Excel Online logbook for Volvo T3. The table has three columns: "Description of performed actions", "Description of encountered problems", and "Solution".

	Description of performed actions	Description of encountered problems	Solution
56	Unusual vibrations	WOT tests with methanol at 1650 rpm, suddenly unusual and strong vibrations occurred. Probably, it is the coupling between the engine and the water brake that started to resonate	
57	Used other fuel cabinet	Because further testing with the pump inside the fuel cabinet of the volvo T3 test bench was impossible, the other fuel cabinet was used. The pump inside only delivers 2.5-3 bar but it is enough to continue testing.	

SHAREPOINT SITE

SharePoint (2.0)

BROWSE PAGE



Start STFES Laboratory STFES Start

Volvo Penta DC7-TA

Notes

Logbook

Agenda set-up

Operational manual

Contacts

Meetings

Component manuals and information

Content of closet

Measurement log-files

Scripts

References

Agenda set-up

← → september 2021

MAANDAG	DINSDAG	WOENSDAG	DONDER
30	31	1	2
6	7	8	9
13	14	15	16

TOOLS

- Don't just take something if you need it!
 - **Report** use to technical staff
 - They can give you instructions if applicable, on the use
 - They then know the whereabouts in case someone else needs it
 - Return as soon as possible, to proper location
- Proper use: see standard operating procedure online
 - In case of doubt: ask us!



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HAZARDOUS SUBSTANCES

- Must be properly labeled, in an appropriate container
- Must be properly handled
 - E.g. gloves, glasses, facemasks, ...
- Are centrally monitored, so
 - Never throw away e.g. empty containers
 - Monitor how much you've used
 - Also helps with planning when you need to order (takes time)
- Read MSDS, “material safety data sheet”



"I imagine this was mentioned
in the solvent handling instructions
I didn't read." 22

HAZARDOUS SUBSTANCES

- Must be properly stored
 - Only take out what you need
- Because of the presence of hazardous substances you are not allowed to eat or drink in the lab!
- If you spill some:
 - Don't clean up yourself
 - Notify the technical staff



MISCELLANEOUS

- Electricity: only make adjustments (e.g. remove or replace sensors) in a powerless state
- Operating of cranes or forklift: only by properly trained personnel! i.e. **NOT YOU!**
- Tools in **the toolbox**, close toolbox when you leave
- Keep your workspace **clean** after use (every night)



CABLING/WIRING

– ... (ref. Frederik, Yves)

IN CASE SOMETHING HAPPENS / YOU SEE IT HAPPENING

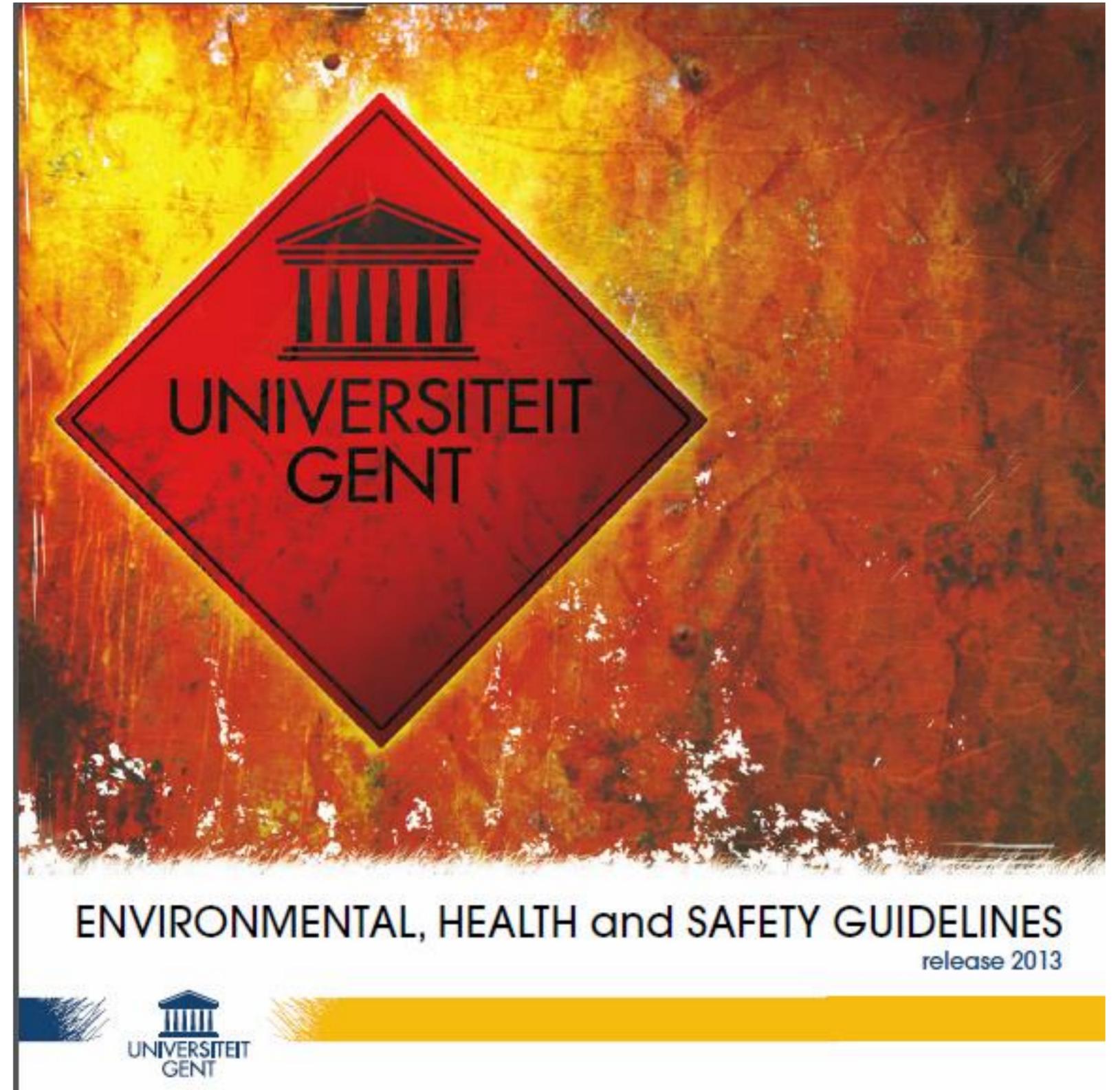
- Get help asap! / help out
- Don't try to cover up, inform us so we can prevent it from happening again
- Emergency phone number at UGent: (09 264 88) 88

Evacuation:

<https://www.ugent.be/intranet/nl/op-het-werk/welzijn/veiligheid/noodplanning/evacuatie> → “evacuatie”

- something's up / get out!

MUST READ!



NOW PAY ATTENTION!

- These rules&agreements are there for good reason
- All department staff (researchers, technicians, professors, ...) can/must check on these rules&agreements
- If you don't follow them:
 - You get a first comment
- **If you still don't follow them we bar you from lab entrance for a week!**

PEOPLE TO KNOW

- Your promotor(s) & your supervisor(s)
 - Scheduling tasks for technicians (biweekly meeting)

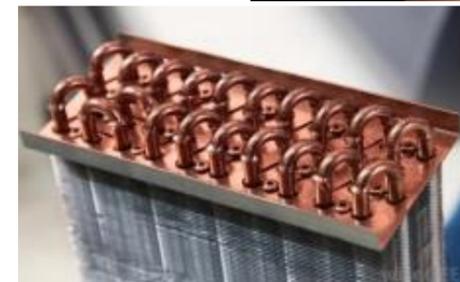
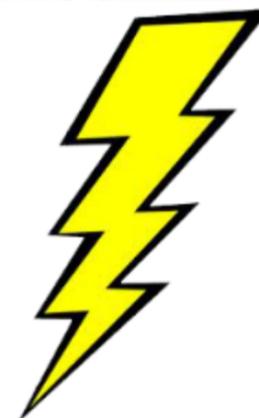
– Admin: Technicians:

Annick Annie

Koen Frederik

Thomas

Bart



TASK PLANNER

- Good to know if, after discussion with your daily supervisor, you need something done by the technical staff:
 - You and your daily supervisor need to discuss it with the technical staff member suited for the task
 - E.g. to find out what needs ordering, how much time the work will likely take
 - Your daily supervisor needs to send an e-mail to the ATP secretary with details on the task
 - Every two weeks, there is an “ATP meeting” where the new tasks are assigned priorities
 - i.e. **plan ahead!**

QUESTIONS FOR TECHNICAL STAFF

- “leave me alone day” – so staff can work undisturbed

Koen	Thomas	Bart	Frederik
Mon	Tue	Wed	Thu

- When staff is working on e.g. lathe: do not disturb
- Send an e-mail with your question, you will get an answer within a day.



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<https://www.ugent.be/ea/eemecs/en/research/stfes>