

Turnaround

**Nyrstar Balen
Roasting**



Safety Flow TA

Participation of safety advisors contractors on site

- Participating in safety meetings
- Reporting incidents
- Inspecting the workplace
- Organizing toolbox meetings
- ...

Execution

- 24/7 safety surveillance
- PPE shop (alternative way of working)
- Follow-up by SPOC zones
- Feedback in daily safety meeting
- ...

- Evaluation
- ...

Follow-up

Preparation

- Safety reviews
- SJAs
- Confined space entry sheets
- Evacuation sheets
- Hoisting plans
- Kick-off meetings
- Document reviews
- Certificates, attestations
- Inspections reports
- ...



EHS KPI

Based on the EHS policy, following KPI have been set:

LAGGING

LEADING

0 recordable injuries

100% registration kick-off for all contractors

100% toolbox meetings before start of every job

1 safety inspection a day by each contractor



- **No injury incidents**
- **No environmental incidents**
- **No critical safety incidents**
- **No violations of the life-saving rules**

Lifting Equipment

I will never stand or walk under a suspended load or operate lifting equipment without approved training, certification, and authorisation.

7



Confined Space Entry

I will never enter a confined space without an entry permit, and only if I am trained and I have received instructions about the risks and controls for working in that specific confined space.

8



Working with Electricity

I will only work on electrical equipment if I am qualified, trained to do so and obtained the appropriate authorisation.

6



Lockout, Tagout & Verification

I will not work on energized equipment without applying my personal isolation lock and tag and verify the isolation is effective (no energy is present). I will never remove the tag or lock of another person or isolation devices present a safety risk to myself or others.

5



Mobile Equipment

I will only operate mobile equipment if I am trained, authorised and follow the required operator rules and procedures.

4



Safety Barriers

I will not enter a restricted area that has barricades and bunting tape and tags without permission and authorisation. I will never disable a safety protection system or device or remove a machine guard without placing it back before re-starting the machine.

2



Working at Heights

I will never work at heights without training, authorisation, and adequate fall arrest and prevention systems.

3



1

Fit for Duty

I have a duty of care to not attend work in a fatigued state e.g., under the influence of drugs and alcohol or in a medical condition that affects my fitness for work as this may present a safety risk to myself or others.



Hot Work

I will not conduct hot work activities without approved training, authorisation and critical controls.

9



Hazardous Substances

I will never handle or use hazardous substances without approved training, authorisation and critical controls in place.

12



Molten Material

I will not conduct molten materials activities without approved training, authorisation and critical controls in place.

11



10

Ground Fall

I will not enter areas of unsupported ground without permission. I will not start working without completing a workplace examination.



THE nyrstar

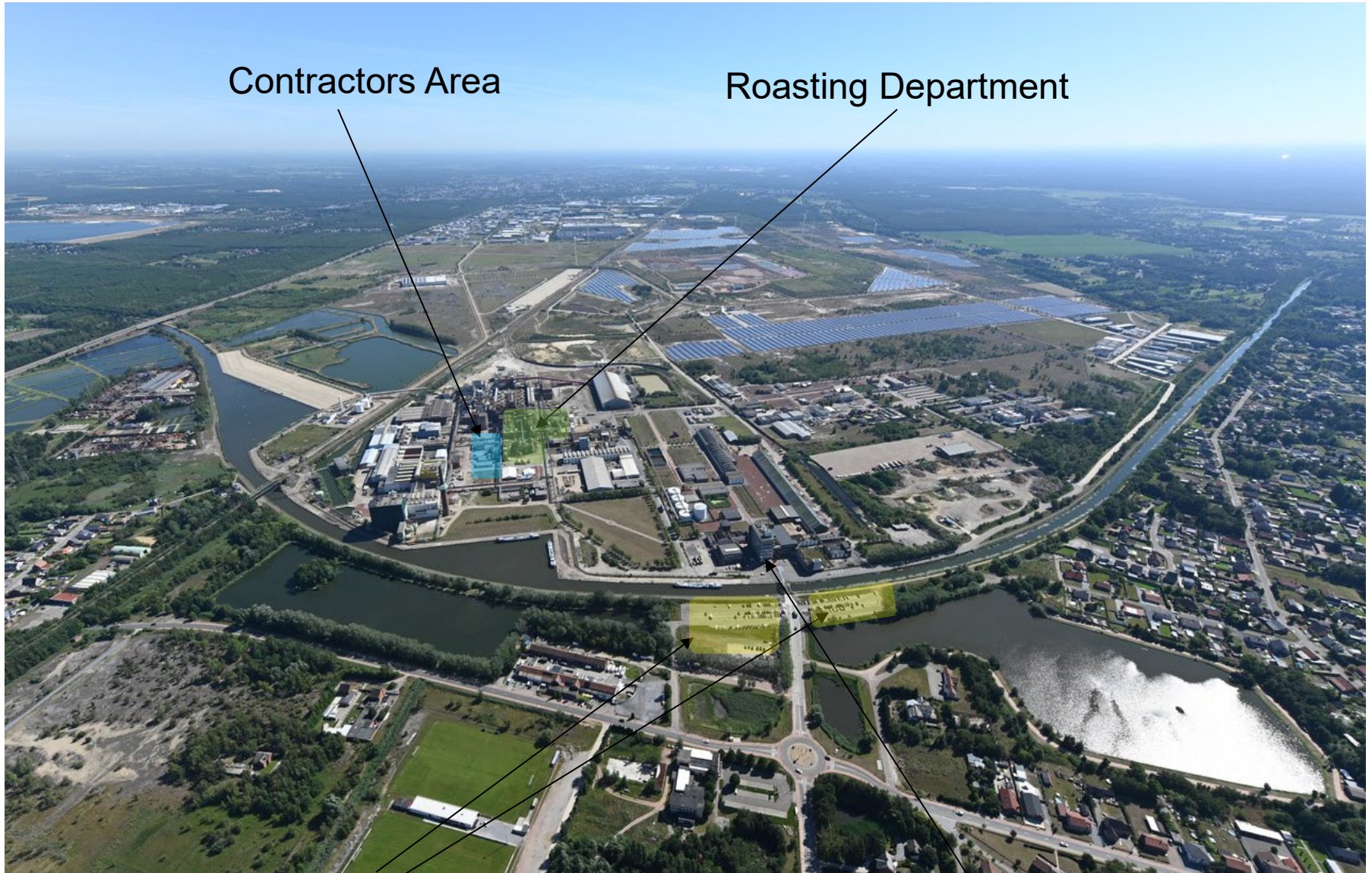
LIFE-SAVING
RULES



Preventing occupational accidents, incidents and dangerous situations at Nyrstar

<p><i>"I'm not familiar with the task/risks"</i></p> <p><i>"I don't feel safe"</i></p> <p><i>"I feel rushed or very tired"</i></p> <p><i>"I don't have the right PPE"</i></p> <p><i>"I have to work with unshielded moving parts"</i></p> <p><i>"I don't know if the lock was done properly"</i></p> <p><i>"I don't have the right tools for the job"</i></p>	<p><i>"I know my task & the risks are under control"</i></p> <p><i>"I have the right tools to do the job"</i></p> <p><i>"I don't work in the line of fire"</i></p> <p><i>"I know the instruction/TRA/procedure, and I have carried out an LMRA"</i></p> <p><i>"I am sufficiently trained to do my job, and I have checked whether my colleague also has sufficient knowledge"</i></p>
<p>Do you recognize yourself in one of these?</p>	<p>Can tick off all of the above?</p>
	





Contractors Area

Roasting Department

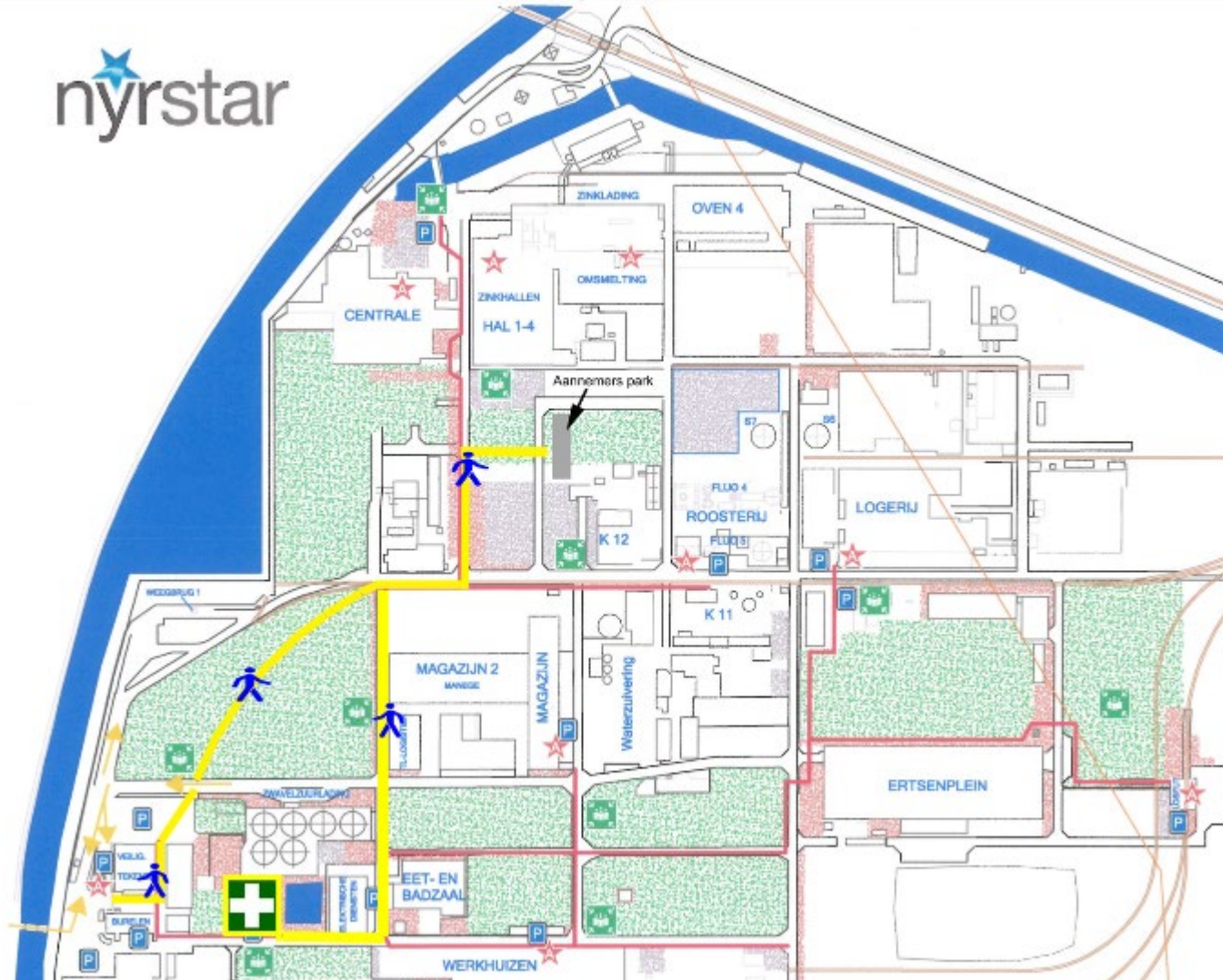
Car Park

Entrance

Route

Follow the indicated yellow path to the contractor area

You may walk to the contractors area without PPE's.



Contractor Area

Showers, lunchroom, lockers

Permit room – Safety shop

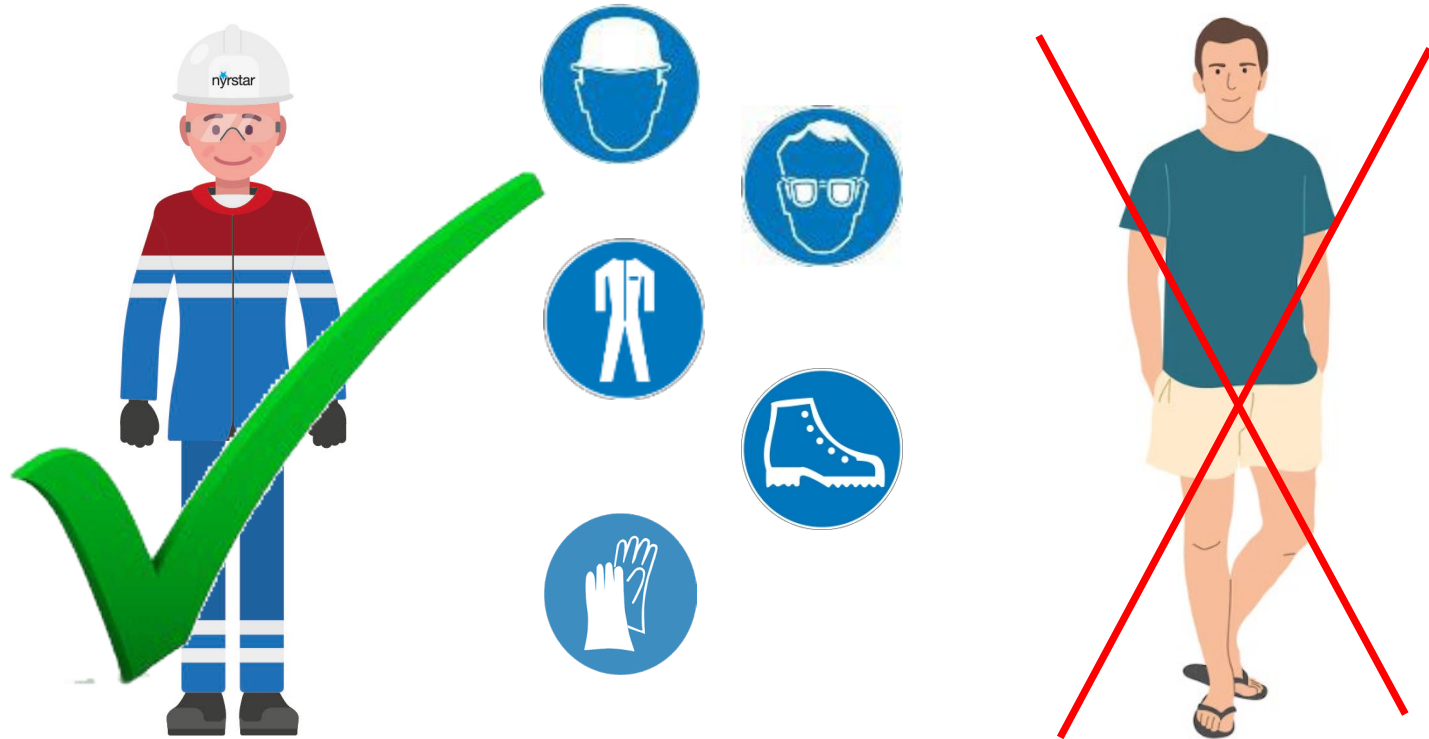
Wharf access

Office building



Wharf access

PPE



- Once you arrive, you change clothes. It's obligatory to wear the **standard PPE's**: safety helmet, safety glasses, safety shoes and fastening (c)overalls that have long sleeves. The sleeves may not be rolled up.
- If **additional PPE** are required, this is mentioned on your work permit.

PPE

Standard close-fitting safety glasses mandatory

Escape mask mandatory in the WHOLE area



SAFETY SHOP

Safety glasses, escape masks and special types of PPE, available in safety shop (next to permit room)

Only open from 6:00 to 17:00 !!

With What Can You Come Into Contact?



- **Zinc concentrate and calcine which contains heavy metals including lead**
- **Sulphates and sulphuric acid**
- **Sulphur dioxide gas, because the other roaster is still in service**
- **Mercury**
- **Sodium hydroxide (Caustic Soda)**
- **Water: Process and cooling water which is not potable. Remember there is no water suitable for drinking in the factory.**
- **Compressed air to 7 Bar**
- **Oil**
- **Steam up to 60 Bar**

Protection from Inhalation

Sulphur Dioxide Gas (SO_2)



Acute effects:

- *Irritation of upper respiratory tract and eyes*
- *Changes in lung function (e.g. shortness of breath, tightness of the chest)*
- *High concentrations are toxic*

Chronic effects:

- *Employees with asthma are more sensitive to the effects*

Careful : One Roaster stays in operation during the shutdown. Personal SO_2 measurements are not needed since special monitoring will be in place for the wharf area.

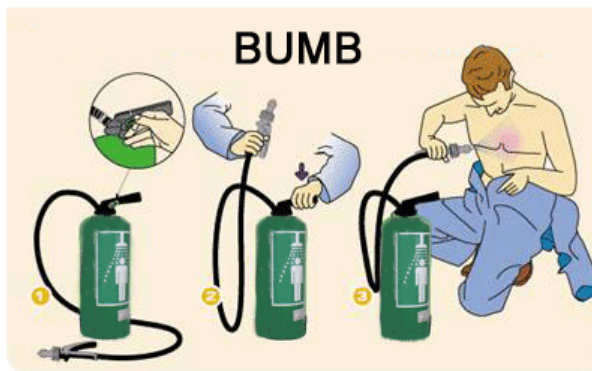
Emergency



★You discover an incident.

1. Warn your colleagues and people nearby.
2. Limit the incident and have someone call the **EMERGENCY NUMBER.**
(014/81)9400 (fire)
(014/81)9300 (accident)
3. Provide clear information to the emergency services and the doormen.
Name
Nature of the incident.
Building and localization.
Mention any casualties + nature of injury.
4. Notify your team leader and colleagues.

What To Do If You Receive Chemical Burns?



Use as soon as possible

- Remove lock
- Push lever down
- Take off wet clothes
- Operate pistole
- Spray affected body parts
- Use full content



Always report and have it taken care of by first aid or doctor



**MINI
BUMB**

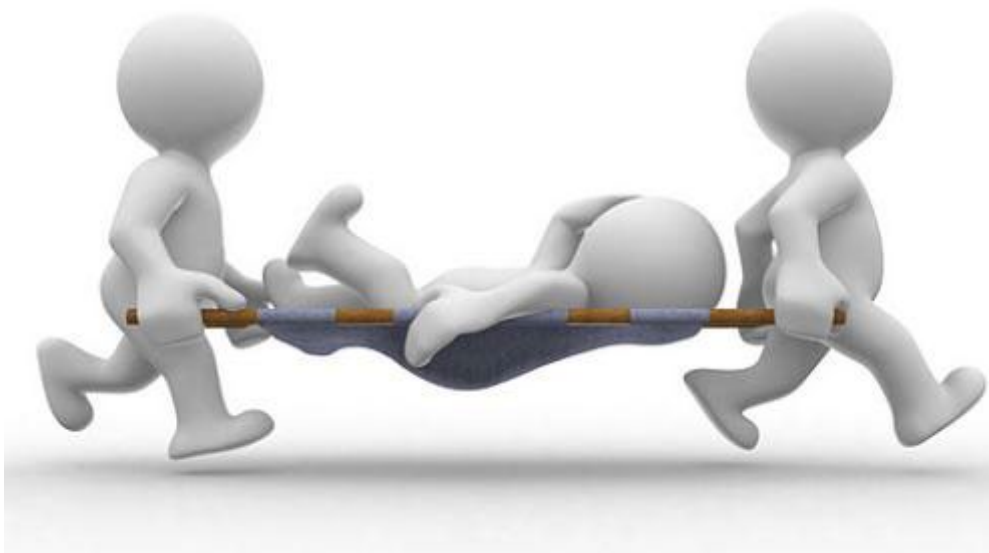
Eyewash bottles are filled with BUMB solution, this are available in the TA control room.

Always check if there is a BUMB bottle in your area, if you In the environment of acid and base are working



If an accident does happen !

**ALWAYS GET MEDICAL ATTENTION FOR ALL INJURIES
NO MATTER HOW SMALL THE INJURY IS!**



Safety Leadership

Nyrstar employees and our contractors are taught to talk to each other whenever they see dangerous behavior or working practices.



He/she who is spoken to about dangerous behaviour or dangerous working practices reacts in a polite and decent manner.

Safety Leadership

**Daily safety briefing in meeting room
contractor village**

**Representation of safety responsible of each
contractor**

Work permit



- For all the work you carry out, you need a valid work permit and any additional forms.
- The work permit can be picked up or handed in by the foreman/supervisor or at the work permit desk.
- The work permit should be handed in at the end of the day at the work permit desk.
- WV desk in coordination container, contractors park
- The work permit expires in the event of evacuation
- Work permit with Task Risk Analysis (TRA): you must be aware of the contents of this TRA beforehand

(LMRA) Last Minute Risk Analysis



In case of a **NO**, do not start the work (take corrective measures).
Contact your leader or the requestor of the work if needed.

	YES	NO	NA
RISKS LINKED TO THE TASK: does everyone understand the risks of the task and its control measures ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is it clear for everyone which PPEs must be used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has the checklist been correctly completed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RISKS LINKED TO THE WORK ENVIRONMENT: is everyone duly aware of the risks in this work environment ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do we know which (dangerous) products are present in this work environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do we think the work environment is OK? (check: <input type="checkbox"/> clean; <input type="checkbox"/> lightening; <input type="checkbox"/> safety barriers)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LOCK OUT: are we sure that we start to work at the right installation/equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are we convinced that the installation has been secured (no energy, no pressure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did everyone put their personal safety lock(s) at the point(s) indicated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ENTERING A CONFINED SPACE: did all involved run through the confined space checklist?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Who has been appointed to supervise entering of the space? Is everyone aware who that is?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
KNOWLEDGE AND EXPERIENCE: has everyone been duly trained and is everyone experienced to execute this task safely?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is this also the case for the employee that is least experienced ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do we have the specific tools and other material that we need at hand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IN CASE THINGS GO WRONG: does everyone know the most nearby emergency-supplies/facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Escape route/assembling point; <input type="checkbox"/> BUMB/emergency shower/eye rinsing product;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire distinguishing material; <input type="checkbox"/> Emergency numbers (see below)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FUNCTIONAL TEST HOISTING: is a valid colour code present?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visual control: are cables and the equipment for fastening the load in good shape?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the control panel and the emergency stop work? In case not, have it repaired FIRST .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

EMERGENCY NUMBERS:

INCIDENT +32 (0)14/81 **9300**

FIRE +32 (0)14/81 **9400**

Prior to the work, a last minute risk analysis must be performed

Working in confined spaces



Always obtain a work permit and an entry permit before entering a confined space!

A manhole guard performs the release measurements

SO2, % oxygen, % LEL, ...

and gives permission to enter a confined space.

Always wear a safety harness in a confined space to facilitate evacuation.

[illegible]

Lockout / Tagout Procedure (LOTO)



Nyrstar Locks



Contractor lock

Every worker:

- Hangs his personal security lock on the appropriate lockbox at the work permits counter
- Is responsible for taking care of his personal key
- At the end of the shift / job, the employees removes his personal lock from the lockbox.

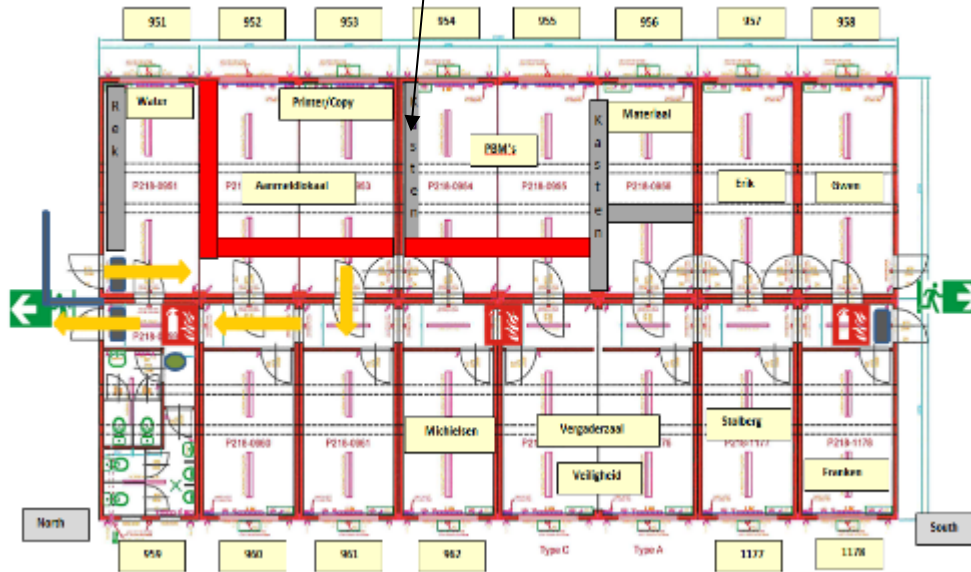
Nyrstar employees place a **red lock** on the Lock Box.

External personnel and contractors has to use blue locks.

Removing a lock from somebody else or not placing a personal lock is a violation of the Nyrstar live saving rules.

Lockout / Tagout Procedure (LOTO)

Permit room – safety shop



1. **PERSONAL** lock on lockbox by **ALL**
2. **Registration** on Permit
3. **Registration** of names on lockbox form

Scaffolding



Max. Load scaffolding:
300kg/m²

Making your own adjustments is a violation of the life saving rules

The green card is for normal scaffolding with a maximum load of 300 kilo per square meter.

Scaffolding with a higher load, a scaffold used for lifting purposes or special measures (use of a fallharness on the scaffold) are labelled with an orange card.

Grinding



For grinding work, a face shield with safety goggles is mandatory, exceptionally, wide-view goggles are possible, demonstrate deviation in TRA



Only use grinding discs with brake and deadman's handle.

Electric tools



- Tools and cables may not show any visible damage.
- Only tools that can be demonstrated to have been tested annually may be used.
- Hanging extension cords on S-hooks



Isolation of Working Areas for High Risk Activities

HD-spraying, blasting, platform/tower work, lifting/hoisting work, etc.



Red – white ribbon = No access to unauthorised personnel



Black – yellow ribbon = Warns of dangerous condition



It's a violation of the life saving rules if you don't respect these ribbons



Only qualified - trained personnel for specific tasks: Forklift / Lifting/Hoisting / Platforms / High Pressure Cleaning

- Always fill in checklist
- Always with inspection documents
- Always wear harness and align in a EWP
- Never leave the EWP at height without additional RA and permission



Lifting operations - rigger

- *You need the required training and the correct certificate for securing loads! The certificate must be delivered to NYRSTAR via online registration.*
- *Correct use of lifting equipment (e.g. lifting points)*
- *Never guide a suspended load with your hands - use a rope or similar.*
- *The crane operator and the person slinging or picking up the load must be able to communicate with each other, i.e.*
- *Eye contact or verbal contact*
- *One person on the spot communicates with the crane operator*
- *Keep a sufficient distance from the suspended load*



Order and cleanliness at work

Prevention measures:

- Use a container for loose nuts and bolts.
- Clean up your workplace regularly, also during the task.
- Do not leave PPE lying around.
- Keep passageways clear and avoid tripping hazards.
- Hang up cables, hoses, etc. on S-hooks!



“No job is worth to die for”

2 contractors burned during sulfuric acid incident in Balen

Key takeaways from the study:

- In the case of high-risk work (strong acid, electricity), check the lock sheet with the situation in the field
- Communicate about risks and PPE during work permit sign-in
- Before you start work: check where the nearest emergency facilities are: emergency shower, BUMB, escape routes
- Wear the correct PPE (as stated on the work permit). They form a final barrier when product is released unexpectedly.



¡LO PRIMERO ES LA SEGURIDAD! पहली प्राथमकिता – सुरक्षा
БЕЗОПАСНОСТТА НА ПЪРВО МЯСТО

TURVALLISUUS ENNEN KAIKKEA
Kiv nyab xeeb
KIYAYEWAR
SIKKERHED FØRST
BEZPEČNOST PŘEDVŠIM

UTAMAKAN KESELAMATAN ARO LOZA VOALOHANY
BEZPIECZEŃSTWO PRZED WSZYSTKIM SVARBIAUSIA SAUGUMAS
DROŠĪBA PIRMAJĀ VIETĀ KESELAMATAN PERTAMA
БЕЗОПАСНОСТЬ ПРЕЖДЕ ВСЕГО SIGURNOST NA PRVOM MJESTU

SAFETY FIRST

VEILIGHEID EERST
Zaštita na radu

ONCE GÜVENLİK
بىلاڤايغ جايى
ÖRYGGIÐ Í FYRIRRÚMI
सुरक्षा
ELŐ A BIZTONSÁG
FEILIGENS EARST
OHUTUS ENNEKÕIKE
الوا ةم الس لا
Veiligheid eerste
PRIMA LA SICUREZZA!
안전 제일
কর্মক্ষেত্রে নরিপত্তা
SEGURANÇA EM PRIMEIRO LUGAR
SICHERHEIT

LA SÉCURITÉ D'ABORD!