Outokumpu Tornio plant Safety and Environmental training

2026

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Learning objectives

During this course, you will learn

- What work safety in Tornio plant area means
- What are the specific hazards of the area
- How you can contribute to the creation of safe working environments and working methods

About the training

- You must pass this training and exam to get an access pass to the Tornio plant area
- Training is mandatory for contractor employees and Outokumpu employees
- Training is valid for 12 months

- Outokumpu introduction films (Youtube):
  - This is Outokumpu
  - From Chrome ore to Stainless Steel

Work safety at the Tornio plant area

Welcome to the Tornio plant area!

Safety concerns all of us

Safety at the plant area

Safety while working

Emergency management

Conclusion

What does safety mean to us?

We are all responsible for our own safety and caring for the safety or our colleagues

Safety takes priority over all other activities, including production

We will follow procedures and evaluate risks before we act

We will investigate all incidents and take actions to prevent re-occurrence, anywhere

Get to know the plant area 1/3

- → Ferrochrome plant
- → Steel melting shop
- → Hot rolling mill
- → Mill Services
- → Cold rolling mill and RAP5
- → The port
- → Cargo gate

Get to know the plant area 2/3

→ Main gate

→ Canteen Rosteri

→ Central repair shop

→ Central office

→ Occupational Health Clinic and HR

→ Research Centre

There are several companies directly involved with the production of ferrochrome and steel that operate inside the Tornio plant area or next to it

→ Manga → SMA → Tornion Voima → Linde group (AGA) → Tapojärvi

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Think before you act!

- Safety starts **with you**
- Before you start working, consider at least these things:
  - Do I know how to perform the task safely?
  - Am I using a correct personal protective equipment?
  - Hazards related to the work?
- Take couple of minutes to think about safety before you start working (last-minute risk evaluation or “Tuumatuokio” in Finnish)
- Think about safety also during working if there are changes in work.

You can use your company's own tool for written last-minute risk evaluation, or the checklist printed with the maintenance work order, or another instructed method.

We are all responsible of work safety

Client:
Outokumpu

- **Responsible** for the risk factors of our operations, their removal and the instructions related to them.
- **Provides** contractors with information on safety aspects and requirements.

Supplier:
Contractors,
Service suppliers

- **Follows** Outokumpu safety instructions
- **Provides** the client information about the hazards related to their own activities
- **Manages** their own operations and supervises their employees

Employee

- **Follows** given guidelines, regulations and work plans.
- **Keeps** the working environment clean and in good order and **takes care** of safety of themselves and other employees
- **Reports** about faults and deficiencies observed in working conditions or work methods, machines, other work tools, personal protective equipment or other equipment, which may cause harm or danger to the safety or health of employees.

Acting against instructions

Remember, that everyone must intervene and report if they see someone breaking the safety rules!

The possible outcomes of these violations are based on severity, intent and repetition and can be:

- Notification and instruction to correct behaviour
- Written reminder
- Written warning
- Removal from the plant area

Remember that outcome is always case specific.

These actions are applied both Outokumpu employees and contractor/service supplier employees.

Outokumpu safety commitment

- **Outokumpu Safety Commitment,** formerly known as the Cardinal Safety Rules – sets clear expectations to protect the safety, health, and well-being of everyone at our sites.
- Safety always comes first. We look out for each other and take responsibility together –so everyone goes home healthy, every day.
- **By working at or visiting an Outokumpu site, you are committed to prioritizing safety above all else in every action and every decision.**
- **The Safety Commitment** defines the minimum safety standards required to protect people. Following it is a shared responsibility.
- **The Safety Commitment** applies to all Outokumpu employees, contractors, and visitors at Outokumpu facilities.
- Any deviation from the **Safety Commitment** is strictly prohibited and will lead in disciplinary action.

1 Safety - Together

I am committed to taking care of myself and others

- Safety is our compass; we look out for each other.
- Together, we ensure that everyone goes home healthy and safe.
- Safety is not just a rule we follow — it is a core value that guides every action we take, both at work and in daily life. We are committed to creating and maintaining an environment where everyone can perform their duties without fear of injury or harm.
- This means being proactive, attentive, and accountable for your own actions as well as for the well-being of those around you. The commitment is to always follow established safety procedures and identify potential hazards before they cause harm.

2 Clearminded and Focused

I am committed to arriving and working sober and drug-fee.

- Alcohol and drugs are not allowed.
- Being under the influence of the alcohol or drugs is not allowed.
- Working under the influence of alcohol or drugs in an industrial environment is dangerous cause to yourself and others.

3 Energy Isolation and LOTOTO

I am committed to following the procedures for Lock out, Tag out and Verifying energy isolation before working on any equipment.

- Following energy isolation and Lock out, Tag out and Test out (LoToTo) procedures protects you and everyone around from severe injuries and fatal accidents.

4 Safety Controls

I am committed to following approved safe working procedures if overriding or disabling any safety controls.

- Fixed guards on the machinery and different kinds of safety systems are in place to ensure our safety.
- If safety systems needs to be deactivated or machine guards removed, always follow the approved safety procedures to ensure that neither you nor anyone else is exposed to danger.

5 Line of Fire

I am committed to keeping a safe distance from suspended loads, moving equipment and vehicles.

- Severe accidents may occur when people are in the danger zone of moving vehicles, equipment, or loads suspended by cranes.

6 Movement and Traffic

I am committed to following all site safety rules for access routes, passage points, and traffic

- Always use designated and instructed access routes and passage points when moving around the site, including crossing over, under, or through process areas or equipment.
- Always follow safe driving rules.
- Failing to follow these rules can create serious hazards for yourself and others.

7 Permit to Work

I am committed to working only with appropriate authorization, after assessing risks, and only on tasks I am qualified for.

- Always follow all required precautions and ensure authorization before starting the work.
- Always assess risks first, including a Last- Minute Risk Assessment.
- Always only perform work for which you are qualified for.
- Starting work without a valid permit, safe system of work, or SOP (Standard Operational Procedure) can expose you and others to serious hazards.

8 Personal Protective Equipment

I am committed to wearing all essential personal protective equipment

- Personal protective equipment (PPE) only works when it is of the right type for the task and worn correctly as instructed.
- Using the wrong personal protective equipment or wearing it improperly can leave you unprotected and at serious risk.
- The correct use of personal protective equipment keeps us safe and healthy.
- Remove all jewelry that could cause entanglement before entering any production, maintenance, or laboratory area.
- PPE on, jewelry off.

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Arriving to plant area

- When arriving to the area, park your car in the car parks located outside the Tornio plant area
  - External employees must park in the guest parking place
  - Park the vehicle rear-first whenever the sign indicates so. Parking rear-first is also general recommendation at the site.
  - If you need a car inside the plant area, you must apply for special driving permit in advance
  - Only driver may enter the area in the car, all passengers must use personnel gates

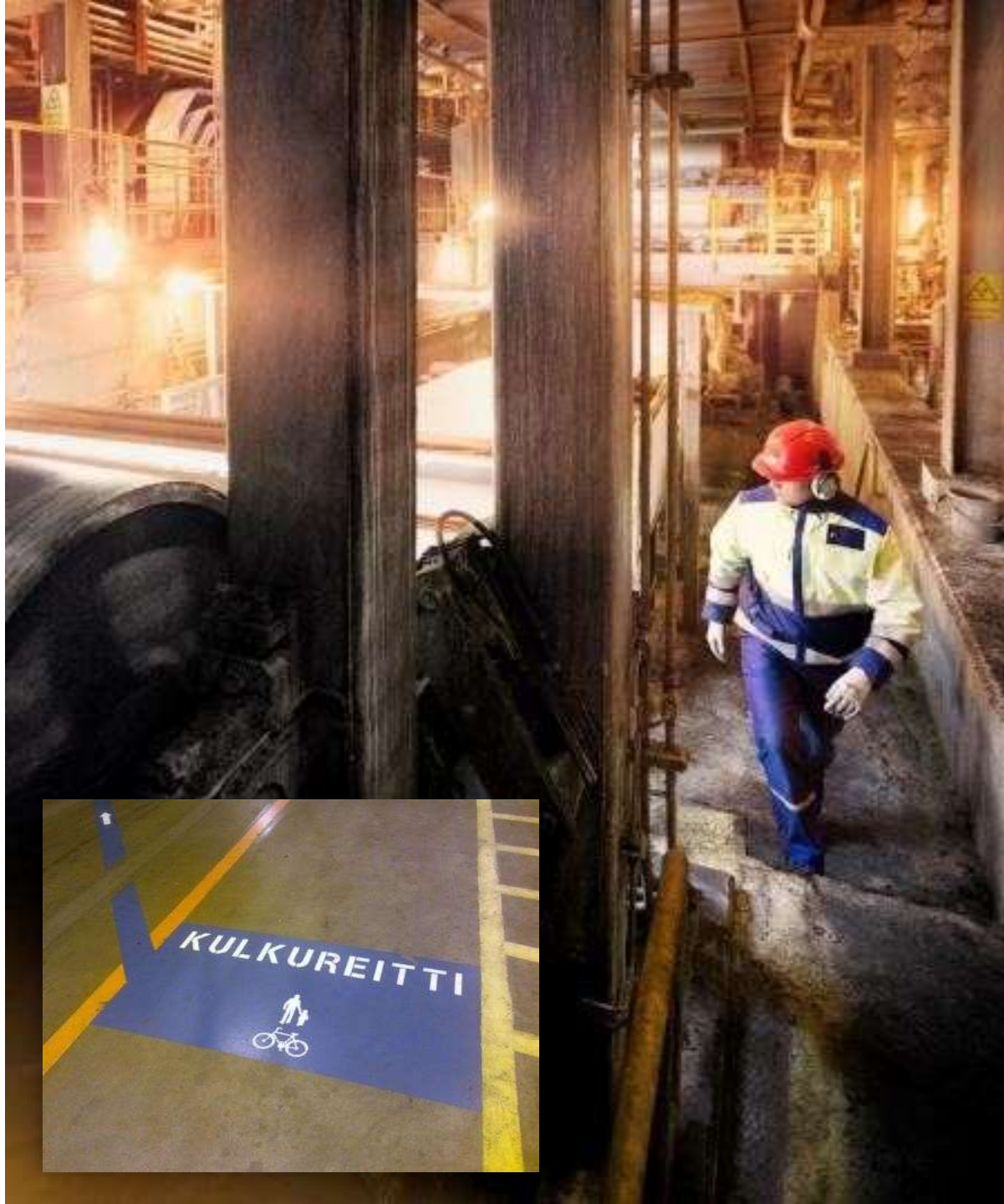
Location of guest parking place

- To access the plant area, you must have a personal electronic access pass
  - You can apply the access pass after passing this training and exam and sending an access pass application before you start working in Tornio plant area
  - A valid Occupational Safety Card© is also a prerequisite for issuing access pass. **Of the Finnish occupational safety cards, only the occupational safety card of the Finnish Centre for Occupational Safety is accepted**.

- Plant area is monitored and protected around the clock using electronic security systems.
  - Access control at gates and camera surveillance in the area

Passenger traffic

- Keep in mind that in Tornio plant area there is a lot of heavy traffic with limited visibility from the cabin
- When moving in plant area or inside buildings, use pedestrian walkways and personnel doors
- In production areas pay attention to the movements of the crane and do not go under the load
- You can prevent slipping and tripping accidents by moving carefully
- To prevent the risk of tripping in stairs, hold the railing at least with one hand
- Cycling is allowed only in certain work tasks
- Always notice the safety signs, such as prohibition signs, warning signs and mandatory action signs (for example required personal protective equipment), when entering different areas and moving around the area.



Vehicle traffic

- Passenger cars and vans enter the plant area using the main gate while heavy traffic enters using the cargo gate
- Private motor vehicles such as mopeds, scooters and motorcycles are not allowed in the plant area

- The general speed limit in 30 km/h
- Vehicle’s speed is monitored regularly

- All work vehicle drivers must have a valid license for the vehicle they operate. They are also responsible for vehicle being in service condition
- Outokumpu forklifts can only be used by trained personnel who have a written permit

Kuljetukset Tornion tehdasalueella

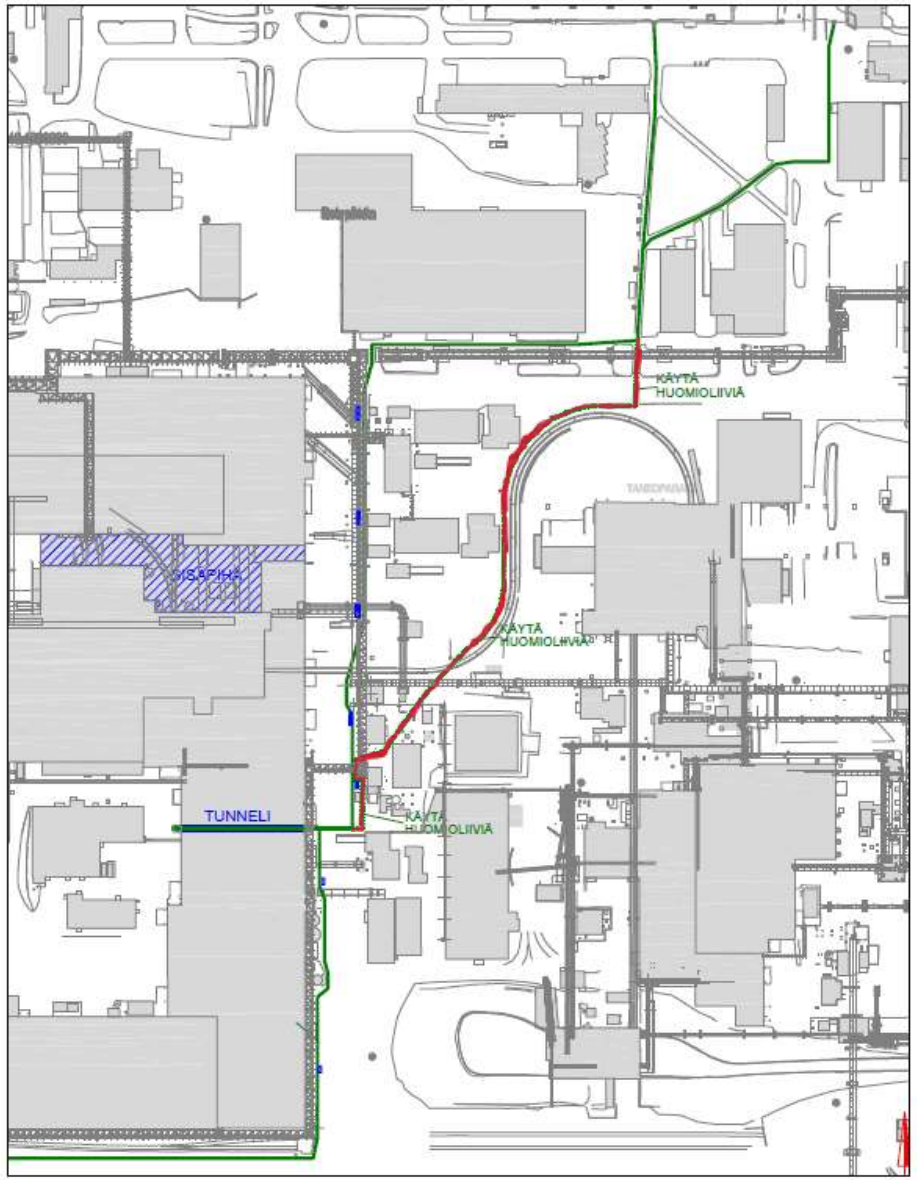
- Tehdasalueella liikkuu päivittäin useita kymmeniä kuljetusajoneuvoja Outokummun ja alueen muiden yritysten toimeksiannosta.
- Kuljetuksiin liittyviä ajoneuvoja ovat esimerkiksi suuret työkoneet, rullankuljetukset (lavettiautot), sulankuljetukset (junat, kuonapata-ajoneuvot) sekä erilaiset raskaat ajoneuvoyhdistelmät.
- Tehdasalueella on ***paljon putkisiltoja*** ja osa niistä sijaitsee alle 8 metrin korkeudessa.
    - Sähkölinjoja kulkee putkisiltojen tavoin paikoin alle 8 metrin korkeudessa.
- Työkoneet ja ajoneuvot, joiden korkeus tai joiden osien korkeus on ***yli 4,7 m, voivat liikkua vain rajoitetusti tehdasalueella***
    - Putkisiltaan törmääminen on merkittävä riski, joka pahimmillaan voi johtaa suuronnettomuuteen.
    - Myös sähkölinjoihin törmääminen aiheuttaa vakavaa vaaraa ja voi johtaa lisäksi ferrokromi- tai terästuotannon keskeytykseen.
- **Kuljettaja vastaa kuljetuksen turvallisuudesta.**

Slag pot vehicles

Molten slag is transported by heavy special vehicles, slag pot vehicles.

Slag pot vehicles are equipped with warning lights. **Pedestrians, cyclists and other vehicles have obligation to give way to slag vehicles as these vehicles do not stop quickly.**

When driving behind loaded slag pot vehicles, a safety distance of at least 20m must be kept due to the risk of molten splashes.



The access routes from the parking areas and from main gate to the steel melting shop's social premises and the office, see the picture (marked with a green line).

Please note that on the route next to the Ferrochrome train railway, you must wear a **warning/attention vest** over civilian clothes (marked with a red line).

There is no obligation to use the warning vest on traditional light traffic (marked with a green line on the map) route. **Protective shelters have been installed along this route due to the danger of splashing from the slag pot vehicle. As the slag pot vehicle moves from the north towards the slag bank, stop at the shelter.**

Forklift’s working area

- Entering and working in forklift working area, such as the area used for loading and unloading, is prohibited
- If pedestrian needs to pass close to the working area they must ensure that forklift driver has noticed them
- Definition for forklift working area doesn’t apply to a forklift moving in plant area from place to another.

The forklift operator is responsible for isolating forklift’s work area with, for instance, barrier tape or bars if it is possible that other people enter the working area.

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Trains and vehicles

- Automated trains and vehicles are used for the transport of coils, molten metal and scrap.
- They always have the right of way and their routes must be kept clear.
- Only trained personnel are allowed to operate them or handle possible breakdowns.

This train carries molten ferrochrome from the ferrochrome plant to the steel melting shop

Pictured here is an automated guided vehicle at the cold rolling mill

Additional instructions applicable to us all

Gas bottles

It is forbidden to bring in or use one's own gas bottles in the plant area

The use of knives is prohibited

Use of knives in the Tornio plant area is forbidden – use replacement tools instead

Data security

- Any type of filming, recording or picture taking in the plant area is prohibited
- In addition, one cannot use any other means either to disclose information related to Outokumpu's production processes, economy or other confidential matters to third parties

Headphones

The use of headphones during working time, for example for listening to music, is not permitted as the music may interfere with the employees ability to hear an alarm signal

Zero tolerance for workplace bullying

Outokumpu does not tolerate any forms of bullying or harassment

Jewelry and other related accessories

Due to entanglement hazard it is not allowed to wear jewelry or related accessories (for example rings, wristwatches, bracelets, necklaces, scarves, ties) in production facilities or other similar facilities.

Using a mobile phone while moving in the plant area is prohibited. This applies to walking as well. Stop while on a phone call or when using a mobile phone for other purposes.

Traffic closures in external areas must be notified to the main gate.

We have zero tolerance for alcohol and narcotic substances

- It is strictly forbidden to use alcohol or other narcotic substances or be under their influence at the workplace!
- Smoking is allowed only in marked places. This applies also for electrical cigarettes.

Regular breath analysis tests are conducted at the gates

Occupational hygiene

- The hazardous substances used in our production areas can be transferred to the human body by inhalation, through the skin and through the mouth, for example via dirty hands when eating or smoking.
- **You can minimize the exposure to hazardous substances by using the required personal protective equipment.**

The canteens can only be entered in clean clothing.

- Leave your work coat in the coat rack
- When wearing an overall, the upper part of the clothes must be rolled down to the waist
- Don’t forget to wash your hands and face as well

Respiratory protection must be used in certain production areas. The respirator must be **equipped with a blower** if the **need for use** during the working day is **more than two hours**.

The half mask may be worn for a **maximum of two hours a day.**

Note! Certain conditions may always require the use of a protector equipped with a blower.

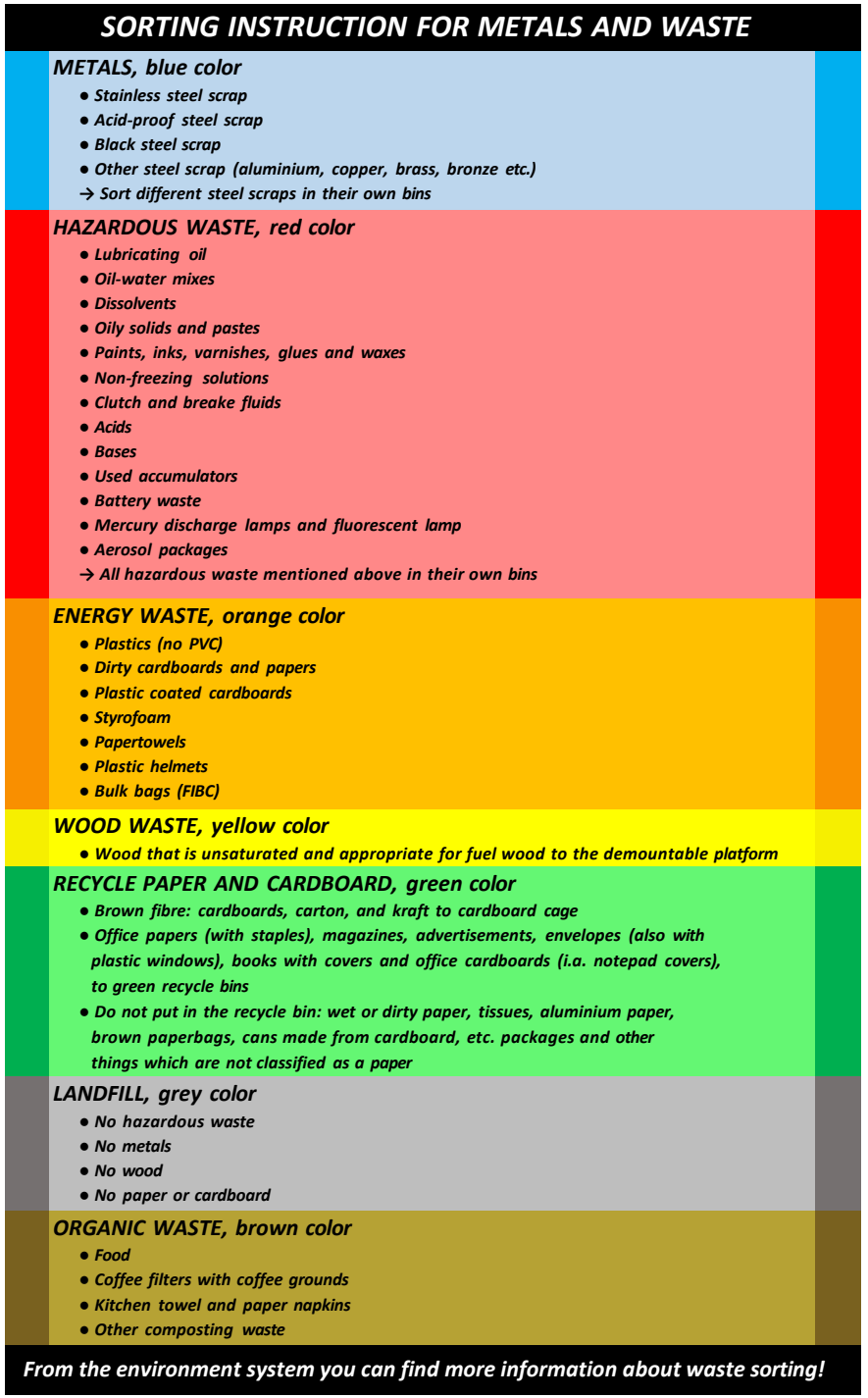
Equipped with blower, when need for use over 2hrs

Half mask, when need for use is under 2hrs

Environmental protection supports sustainable development

- We aim to minimize emissions and their impacts on the environment
- Possible accidents must be reported to Outokumpu personnel
- Major oil or chemical leaks must also be reported to the main gate
- Sorting or wastes is a part of our controlled environmental protection

→ What sorting instructions look like?



Environmental permit and limit values

- The environmental permit sets the ground rules for our operations
- The effects of our operations are monitored in accordance with the monitoring programs agreed with the authorities
- Limit values have been set for emissions
- We handle our processes and emissions purification equipment carefully so that the load remains as low as possible under all conditions

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Avoid hazards by protecting yourself properly

- Using appropriate protective equipment is an easy way to increase your safety at work.
- Below you can see list of mandatory protective equipment in all our departments.

Safety glasses

Industrial safety helmet and hearing protection

Safety gloves that protect you against the hazards of your work

Anti-flame protective clothing

Safety shoes, with penetration-resistant sole

Assess the risks before you start the work!
Examples of hazards related to hand safety:
- Cuts
- Stack wounds
- Chemical exposure
- Burns and frostbites

Examples of special protective equipment required by a specific task or working area

Safety helmets' chin strap

- In places where's a risk of falling when working in heights, the helmat must have **a chin strap attached** under the chin

Welding helmet

- In areas where's an obligation to wear a helmet, a helmet must also be used for welding work

Sealed safety goggles

- When working with an angle grinder and picking machine, use sealed face or eye protection

Respirator

- **Use respirator** when working in dusty work places

Safety glasses on outside areas

- Due to the dust, it's recommended to use eye protection all the time in Tornio site area

Cut resistant gloves

- Use cut resistant gloves when handling sharp tools / materials

Neck cover and visor

- Use neck cover and visor in areas which handle dangerous chemicals

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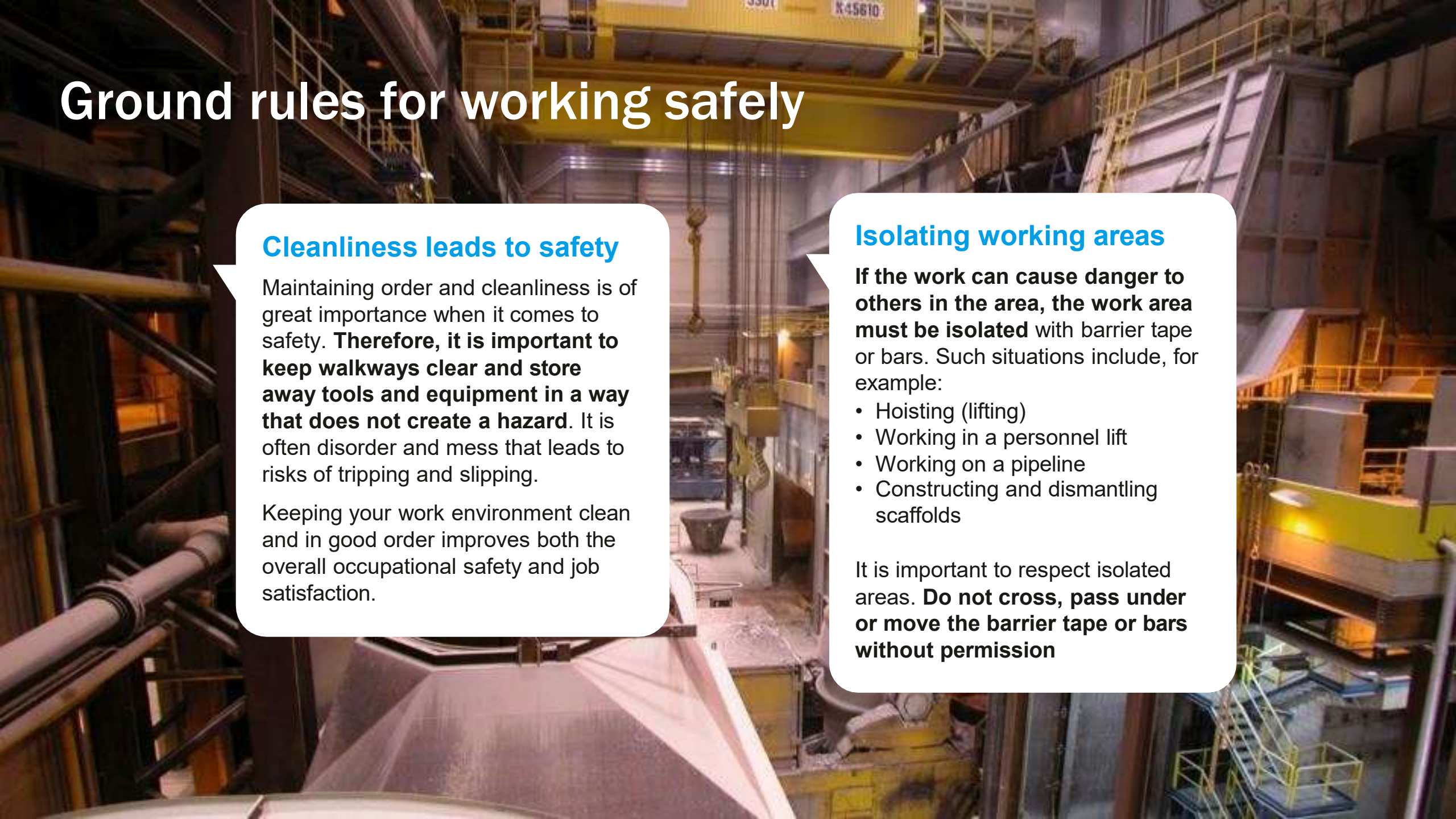
Ground rules for working safely



Cleanliness leads to safety

Maintaining order and cleanliness is of great importance when it comes to safety. **Therefore, it is important to keep walkways clear and store away tools and equipment in a way that does not create a hazard**. It is often disorder and mess that leads to risks of tripping and slipping.

Keeping your work environment clean and in good order improves both the overall occupational safety and job satisfaction.

Isolating working areas

If the work can cause danger to others in the area, the work area must be isolated with barrier tape or bars. Such situations include, for example:

- Hoisting (lifting)
- Working in a personnel lift
- Working on a pipeline
- Constructing and dismantling scaffolds

It is important to respect isolated areas. **Do not cross, pass under or move the barrier tape or bars without permission**

Ground rules for safety

Electrical safety

Only electricians are allowed to perform electrical installations

The electrical safety of the Tornio factory area is ensured using the following means:

- **Defective/broken electrical devices are immediately taken out of use** and sent to repair
- **Extension cords** crossing passageways are **marked and protected**
- **Entry to electric rooms requires** a permission and special training
- When working in moist or confined conductive surrounding such as metal containers it is mandatory to familiarize oneself with the more detailed safety instructions

Hot work

At the Tornio plant, all hot works are done according the Hot work manual. Hot works require following safety procedures:

- **Written hot work permit**. Temporary hot work locations require a valid hot work card.
- First-aid **extinguishing equipment** that comply with standards**. Do not borrow extinguishers from marked places**.
- **Non-flammable protective clothing.** The person guarding hot works must wear **a high visibility vest**
- Conveyers, cables and combustible structures must be **protected**
- All flammable material must be removed. In Addition, it's important to prevent sparks from spreading to adjacent spaces.
- At least two hours **post hot work guarding**

Check-in procedures

- Get a work permit from the supervisor of the area, agree the start of the work
- Always check-in with the area's control room personnel before starting the work. In some departments / situations electrical check-in system is also in use.
- Every check-in must be recorded
- After finishing a task or a shift, remember to check-out
- Check-in procedures apply contractors and Outokumpu personnel who normally don't work in the area

Tasks that require a written permit

There are tasks in Tornio plant area that require special skills, qualificatons and special risk management procedures. Safety of these tasks is ensured with our written work permit procedure.

1) When work is supervised by a contractor. Excluding instructed standard work defined by the buyer, works in office and outdoor areas performed by property and maintenance service companies or inspection walks and visits performed by supervisors and work planners
2) Prevention of un-expected start up of a machine is there is no written instruction available
3) Hot work and hot work on roofs (hot work permit)
4) Work done in confined or closed spaces such as containers or exhaust gas pipes
5) Working in the danger zone of a crane or near the electrical cables or crane (e.g. construction of scaffolds in such locations)
6) Work related to chemical and gas pipes and equipment
7) Pressure equipment and related piping
8) Work in EX-rooms
9) New excavations works in the plant area, works in the dams and works effecting cleanliness of waters
10) Works in the NeRe area and in the CO2 danger zone
11) Work on roofs of production units. Excluding instructed standard works performed by the property and maintenance service companies
12) Works with the risk of falling if there is no documented risk assessment
13) Working on a straight ladder (only in special cases)
14) Troubleshooting in a danger zone while production is ongoing
15) Situations where the energies of the machine or equipment can not be completely isolated
16) Use of angle grinder (Hot work permit if the workplace requires a Hot work permit and work permit if the workplace does not require a Hot work permit)
17) Other hazardous works specified by the area's management

Prevention of unexpected energization or start-up of machines

It is not allowed to work or move in danger areas of the machines and equipment before unexpected start-up has been prevented. Follow instructions below (Lock Out, Tag Out, Test Out, LOTOTO procedures) before going to the danger area of machine or equipment.

1. Check-in

Check-in to the area's control room personnel and record your check-in. Identify the hazards of an unexpected start-up of the work site.

2. Isolate energies

Isolate energies after receiving permission to do so. Energy sources to isolate include for example electrical, fluid, pneumatic, hydraulic and mechanical.

3. Lock Out and Tag Out

Perform the necessary lockings and add start-up prohibition signs. Each person involved in the work participates in the lockings with their own personal lock.

One person - One lock

4. Verify successful isolation - Test Out

Ensure that the isolation of energies has succeeded, for example by testing.

5. Ensure it is safe to start the work

Ensure from the supervisor that it is safe to start the work. Work can begin once permission has been obtained.

6. Finish the work

When the work is completed and all persons have left the danger area, the locks are removed. The main rule is that the lock may only be removed by the person who set it. Finally, check-out to the area's control room personnel and record your check-out.

Securing the work site may only be done by a qualified person. (Securing = isolation of energies and lockings). If necessary, ask for more information from your supervisor, shift foreman or shift maintenance technician.

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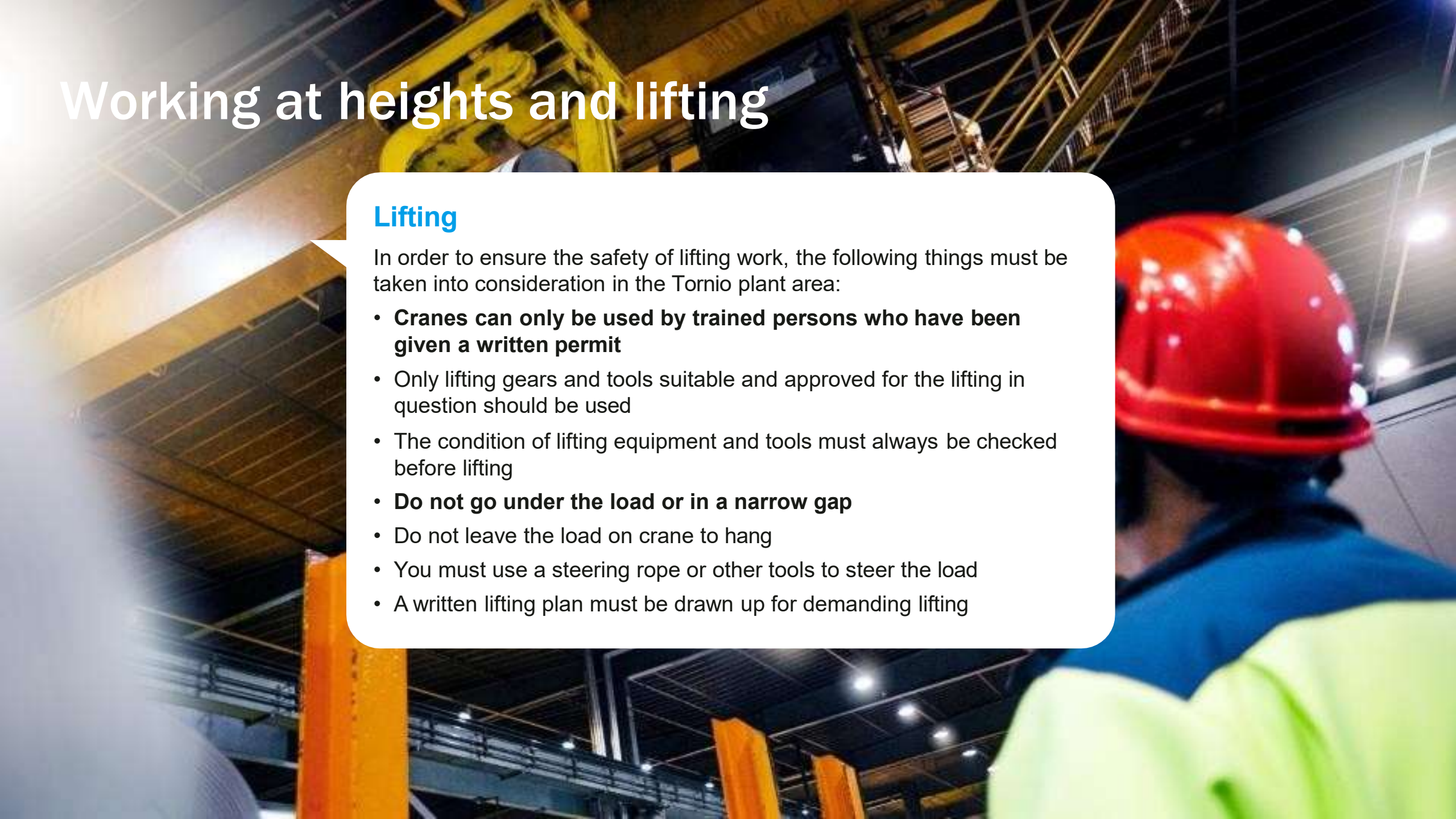
Working at heights and lifting



Lifting

In order to ensure the safety of lifting work, the following things must be taken into consideration in the Tornio plant area:

- **Cranes can only be used by trained persons who have been given a written permit**
- Only lifting gears and tools suitable and approved for the lifting in question should be used
- The condition of lifting equipment and tools must always be checked before lifting
- **Do not go under the load or in a narrow gap**
- Do not leave the load on crane to hang
- You must use a steering rope or other tools to steer the load
- A written lifting plan must be drawn up for demanding lifting

Working at heights and lifting

Protection is the key

You must ensure that falling is prevented in all situations and during all works

The best fall protection system is one that prevents access to an area where falling is possible. This can mean a properly sized rope and its anchorage point for example

In personnel lifts, fall protection harness attached to the lifting basket must be used at all times

Keep in mind, that barrier tape is not a railing!

Scaffold

The scaffold may only be erected, dismantled or modified by a person who is trained to carry out scaffolding work.

Always check the scaffold before working:

- The scaffold must have an inspection tag. If it is missing, the scaffold may not be used.
- Access to the scaffold should be safely arranged, primarily along the stairs. The ladder route is allowed only when stairs are not possible to assemble.
- Scaffold must have safety rails and toe boards
- Also check the working level locks and general cleanliness

When the scaffold is erected in the overhead crane's movement area, a written work permit is required.

Working at heights and lifting

Working on top of each other

The rule of thumb is that working on top of each other on different working levels is prohibited. This is due to, for example, the risk of falling objects.

Work must be planned in such a way that no tasks are performed in overlapping levels at the same time.

Ladders

It is forbidden to work on a straight ladders. They can only be used as a temporary passageway and for attaching/removing a small and light lifting tool or fall protector arrester

A-ladders can only be used as a work platform if it is not reasonable to require the use of a work platform, scaffold or a personnel lift.

Works with the risk of falling

Before starting works with the risk of falling, risk assessment must be carried out.
While working, it is important to use appropriate fall protection equipment and to wear a helmet with a chin strap. There must also be an appropriate rescue plan made by person in charge.

The connection of the personal fall arrestor during work and moving must be ensured, for example, by means of a double tie off lanyard (Y-lanyard) which allows moving horizontally while being continuously attached

Chemicals at the Tornio plant

There are several hundreds of different chemicals handled in Tornio plant e.g. raw materials, process chemicals, lubricants and chemicals for maintenance purposes.

Please note that some of the chemicals used in the area pose a risk to reproductive health.

- For example carbon monoxide, ceramic fibers used in furnaces and sulfuric acid fumes
- For more information, contact your occupational healthcare provider

Some hazardous chemicals at Tornio plant

Corrosive substances:

- Hydrofluoric acid and Sulphur dioxide
- Other corrosive substance: Sulfuric acid, Nitric acid, Sodium hydroxide, Ammonia solution

Toxic substances:

- Carbon monoxide
- Hydrofluoric acid and Sulphur dioxide

Chronical health hazard:

- Carbon monoxide
  (may damage the unborn child)

Highly flammable substances:

- Natural Gas
- Carbon monoxide
- Hydrogen

Oxidising substances:

- Oxygen

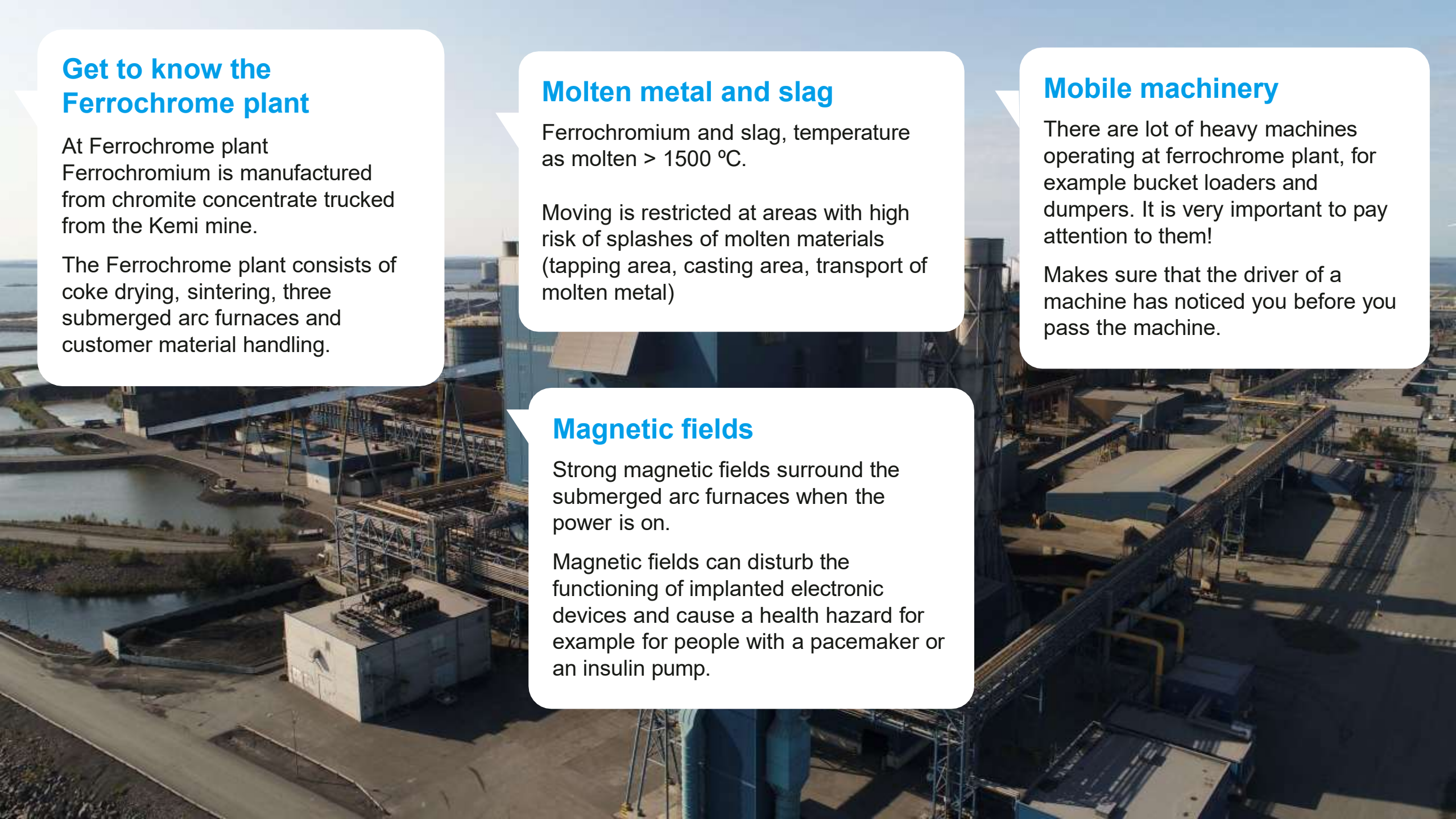
Also nitrogen and argon gases are handled and stored at the plant

Always check the chemicals used and stored at the working place!

The hazards are described best in the Chemical Safety Data Sheet of a substance

Specific hazards of the departments

Hazards in the ferrochrome plant



Get to know the Ferrochrome plant

At Ferrochrome plant Ferrochromium is manufactured from chromite concentrate trucked from the Kemi mine.

The Ferrochrome plant consists of coke drying, sintering, three submerged arc furnaces and customer material handling.

Molten metal and slag

Ferrochromium and slag, temperature as molten > 1500 ºC.

Moving is restricted at areas with high risk of splashes of molten materials (tapping area, casting area, transport of molten metal)

Mobile machinery

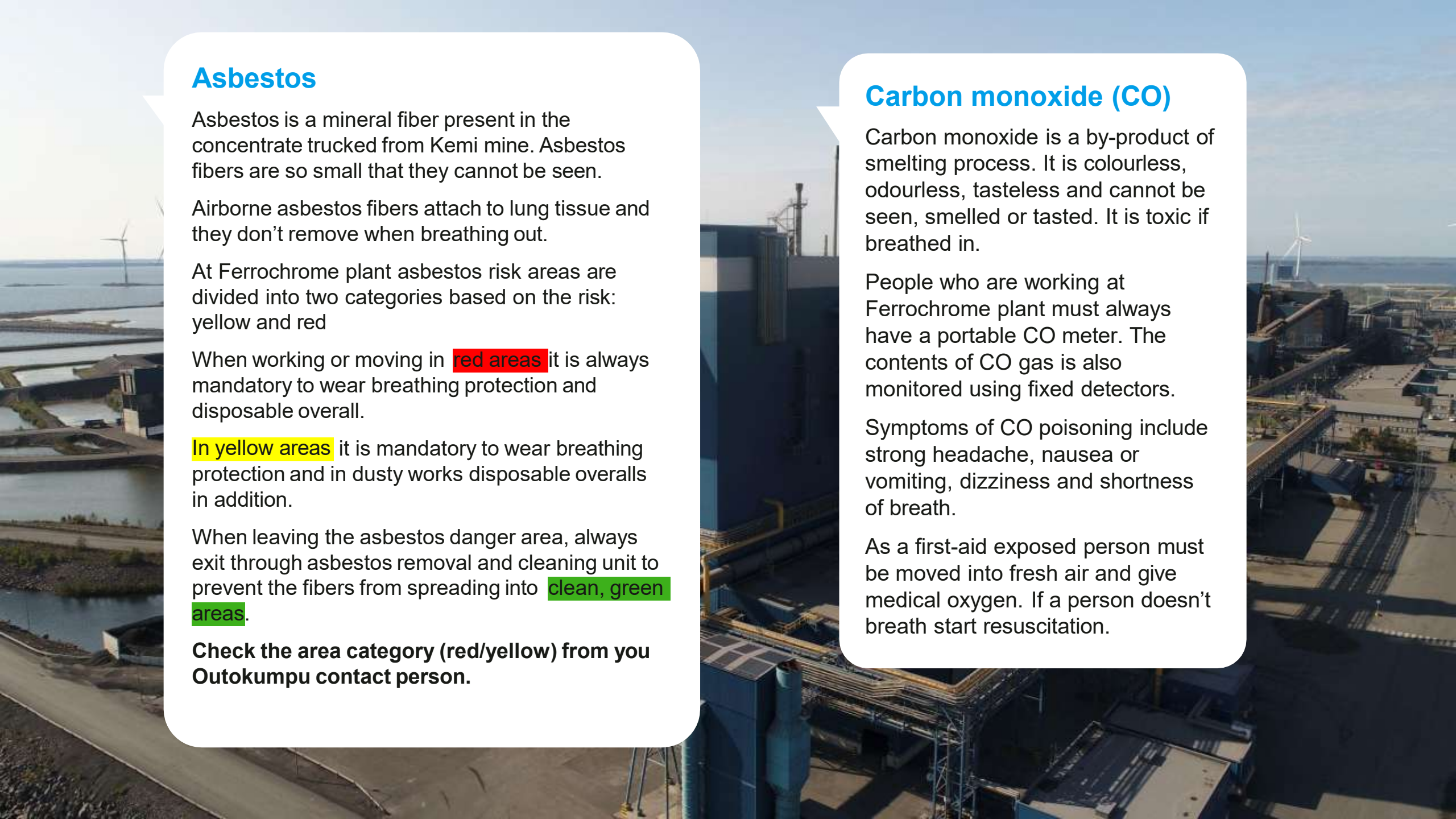
There are lot of heavy machines operating at ferrochrome plant, for example bucket loaders and dumpers. It is very important to pay attention to them!

Makes sure that the driver of a machine has noticed you before you pass the machine.

Magnetic fields

Strong magnetic fields surround the submerged arc furnaces when the power is on.

Magnetic fields can disturb the functioning of implanted electronic devices and cause a health hazard for example for people with a pacemaker or an insulin pump.



Asbestos

Asbestos is a mineral fiber present in the concentrate trucked from Kemi mine. Asbestos fibers are so small that they cannot be seen.

Airborne asbestos fibers attach to lung tissue and they don't remove when breathing out.

At Ferrochrome plant asbestos risk areas are divided into two categories based on the risk: yellow and red

When working or moving in red areas it is always mandatory to wear breathing protection and disposable overall.

In yellow areas it is mandatory to wear breathing protection and in dusty works disposable overalls in addition.

When leaving the asbestos danger area, always exit through asbestos removal and cleaning unit to prevent the fibers from spreading into clean, green areas.

Check the area category (red/yellow) from you Outokumpu contact person.

Carbon monoxide (CO)

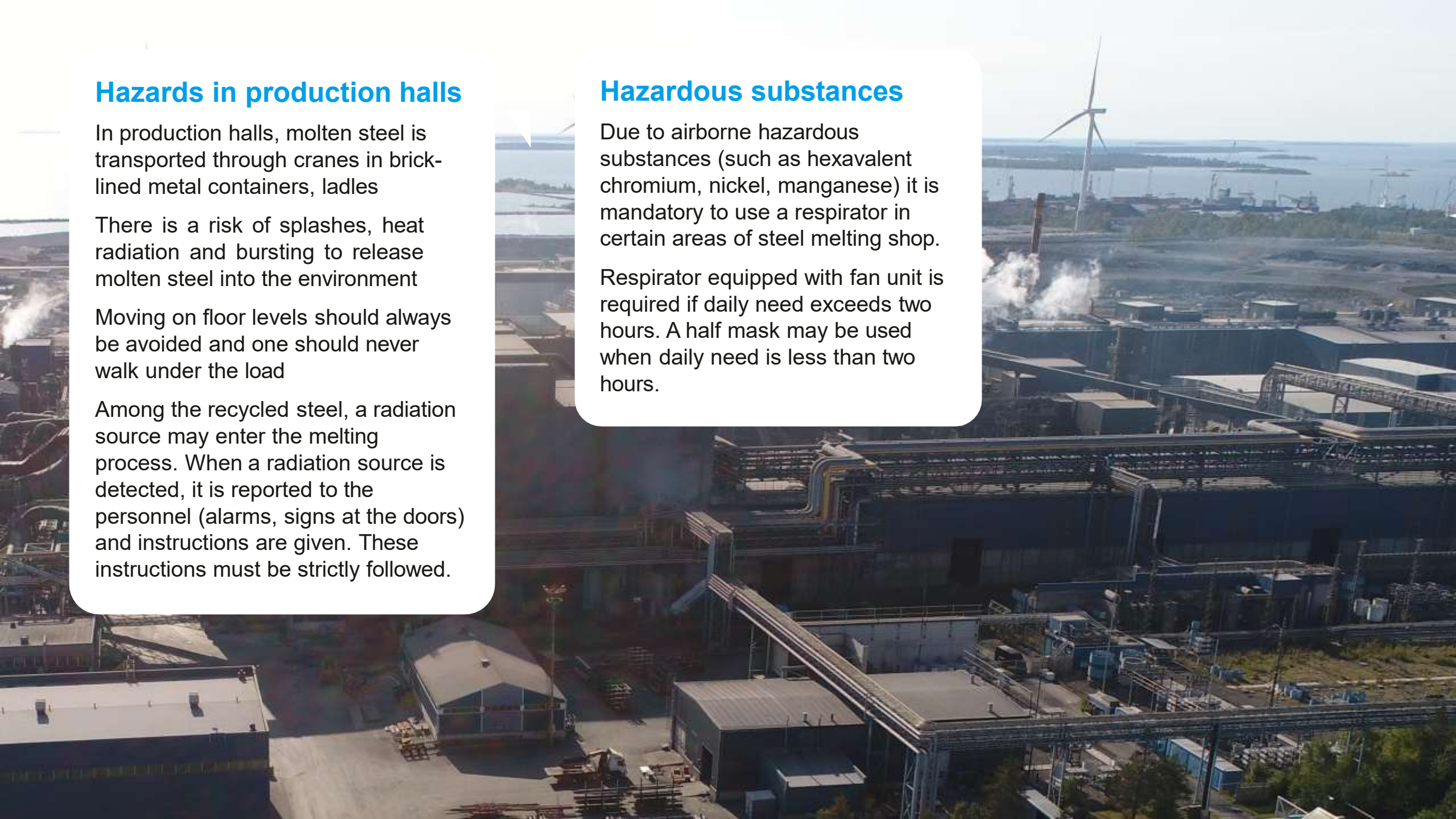
Carbon monoxide is a by-product of smelting process. It is colourless, odourless, tasteless and cannot be seen, smelled or tasted. It is toxic if breathed in.

People who are working at Ferrochrome plant must always have a portable CO meter. The contents of CO gas is also monitored using fixed detectors.

Symptoms of CO poisoning include strong headache, nausea or vomiting, dizziness and shortness of breath.

As a first-aid exposed person must be moved into fresh air and give medical oxygen. If a person doesn't breath start resuscitation.

Hazards in the Steel melting shop



Hazards in production halls

In production halls, molten steel is transported through cranes in brick-lined metal containers, ladles

There is a risk of splashes, heat radiation and bursting to release molten steel into the environment

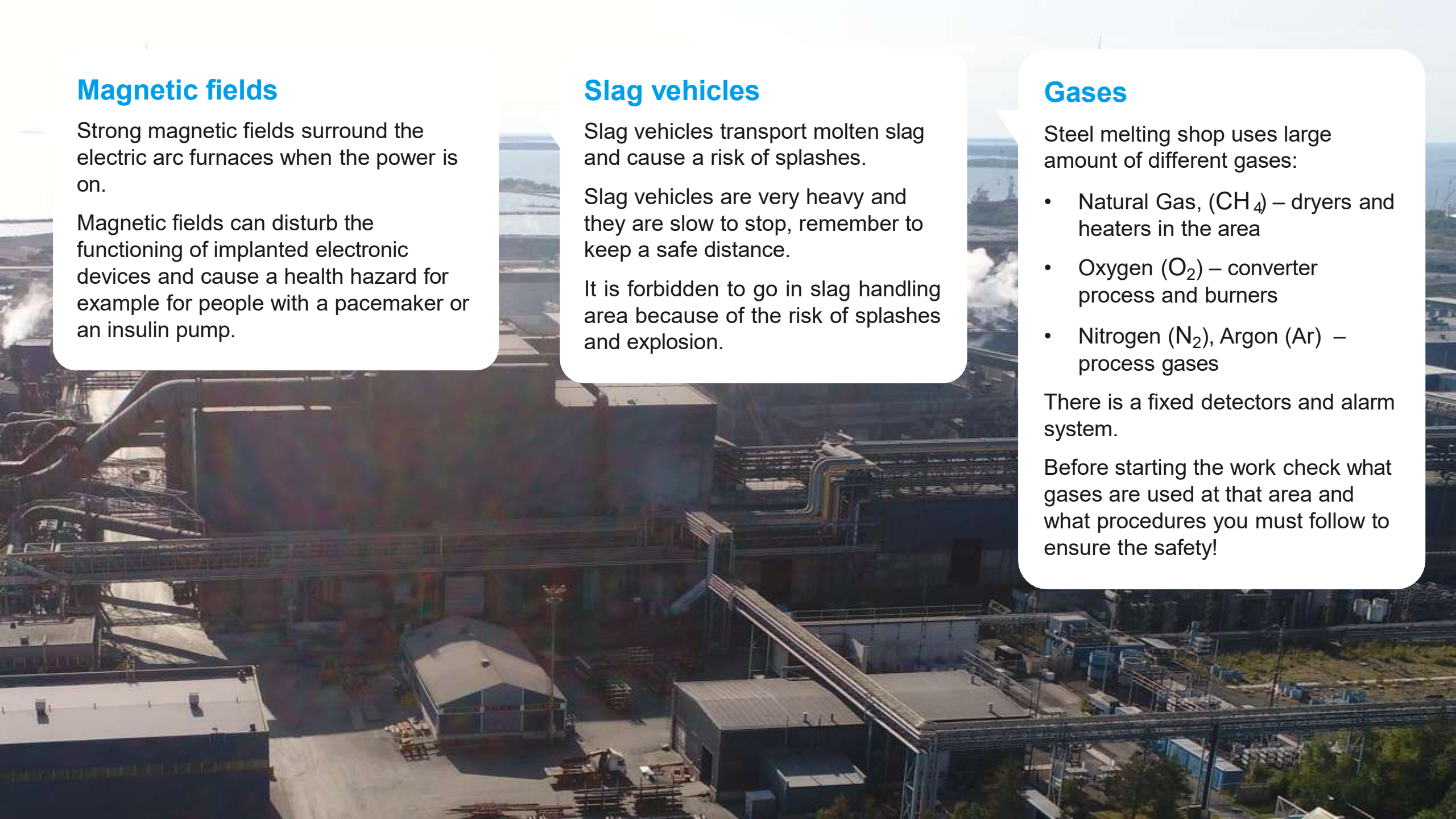
Moving on floor levels should always be avoided and one should never walk under the load

Among the recycled steel, a radiation source may enter the melting process. When a radiation source is detected, it is reported to the personnel (alarms, signs at the doors) and instructions are given. These instructions must be strictly followed.

Hazardous substances

Due to airborne hazardous substances (such as hexavalent chromium, nickel, manganese) it is mandatory to use a respirator in certain areas of steel melting shop.

Respirator equipped with fan unit is required if daily need exceeds two hours. A half mask may be used when daily need is less than two hours.



Magnetic fields

Strong magnetic fields surround the electric arc furnaces when the power is on.

Magnetic fields can disturb the functioning of implanted electronic devices and cause a health hazard for example for people with a pacemaker or an insulin pump.

Slag vehicles

Slag vehicles transport molten slag and cause a risk of splashes.

Slag vehicles are very heavy and they are slow to stop, remember to keep a safe distance.

It is forbidden to go in slag handling area because of the risk of splashes and explosion.

Gases

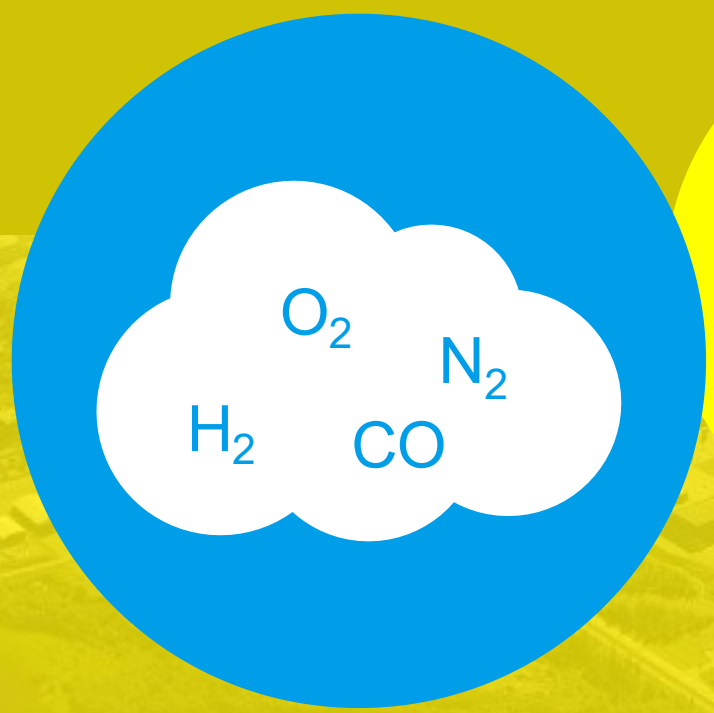
Steel melting shop uses large amount of different gases:

- Natural Gas, (CH_4) – dryers and heaters in the area
- Oxygen (O_2) – converter process and burners
- Nitrogen (N_2), Argon (Ar) – process gases

There is a fixed detectors and alarm system.

Before starting the work check what gases are used at that area and what procedures you must follow to ensure the safety!

Hazards in the Hot rolling mill



Gases

The hot rolling mill uses large quantities of gases in **w**alking **b**eam **f**urnace and bell annealing furnace.

Gases used in WBF are:

- Natural gas (CH_4)
- Carbon monoxide (CO)
- Oxygen (O_2)

Remember to check in at area's control room!

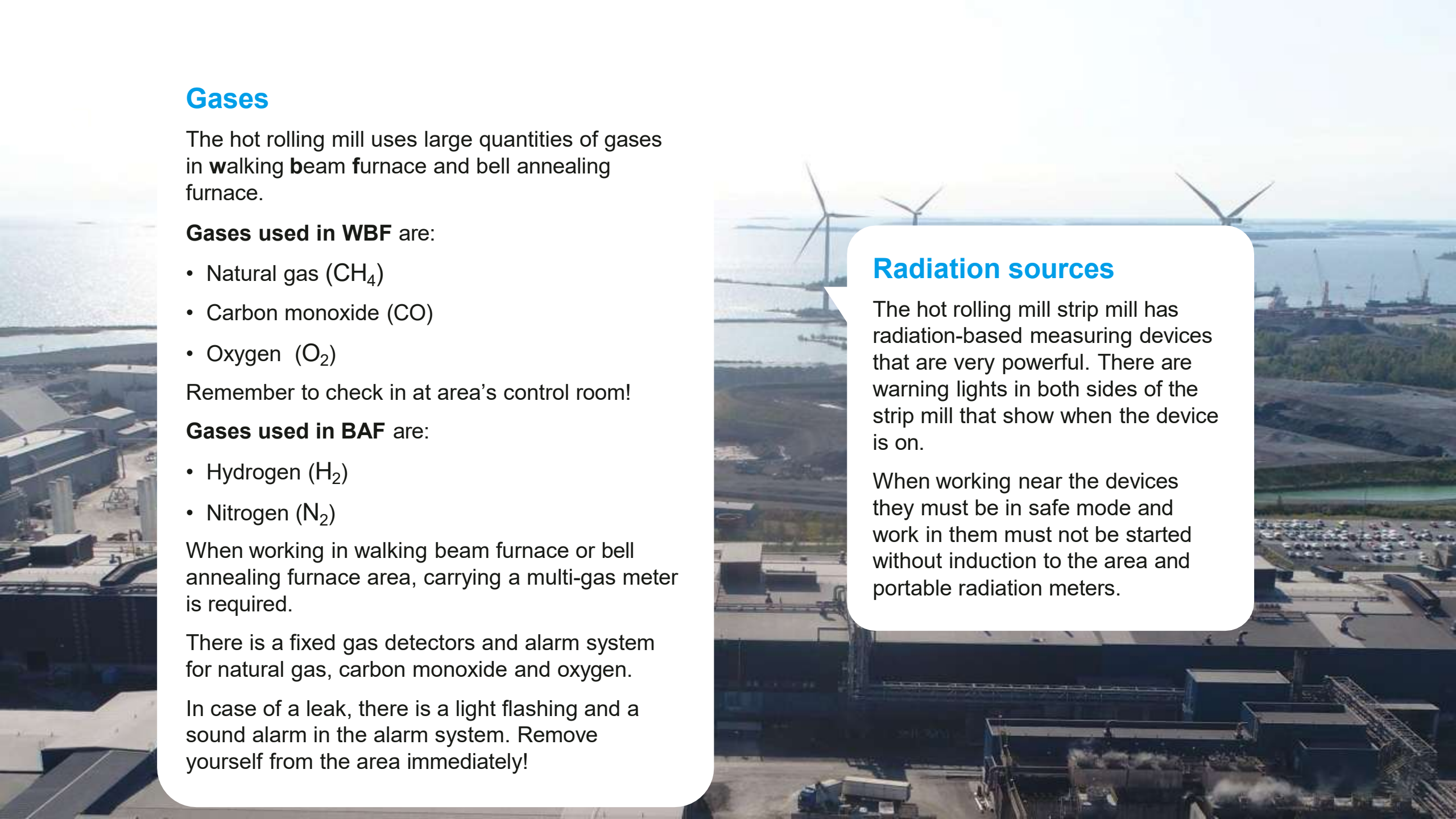
Gases used in BAF are:

- Hydrogen (H_2)
- Nitrogen (N_2)

When working in walking beam furnace or bell annealing furnace area, carrying a multi-gas meter is required.

There is a fixed gas detectors and alarm system for natural gas, carbon monoxide and oxygen.

In case of a leak, there is a light flashing and a sound alarm in the alarm system. Remove yourself from the area immediately!



Radiation sources

The hot rolling mill strip mill has radiation-based measuring devices that are very powerful. There are warning lights in both sides of the strip mill that show when the device is on.

When working near the devices they must be in safe mode and work in them must not be started without induction to the area and portable radiation meters.

Hazards in the Cold rolling mill

CO_2

Get to know the Cold rolling mill

The cold rolling mill employs about 710 people and has 23 production lines. Therefore, material transport and passenger transport in the area are lively.

Carbon dioxide CO_2

The cold rolling mill uses carbon dioxide as a fire extinguishing agent. At high concentrations carbon dioxide is life threatening to humans.

Working in the lines equipped with carbon dioxide extinguishing equipment requires the use of a separate hazard area work permit and a rescue device.

In the event of a carbon dioxide alarm, exit the danger area and follow the given instructions.

Hazardous substances

Most important chemicals used at the Cold rolling mill are hydrofluoric acid, nitric acid and sulfuric acid Also, natural gas (NG) and carbon monoxide (CO) are used.

There are marked areas where chemicals are handled and requirements for additional personal protective equipment which include visor attached to helmet, neck protector and chemical resistant gloves.

In these areas a written work permit is mandatory.

Automatic cranes and AGV's

Never enter to areas where automatic cranes operate.

Never enter designated passage routes for automated guided vehicles (marked with high visibility chains).

Hydrofluoric acid, HF

- Gaseous hydrofluoric acid is colourless. It has a very irritating smell.
- Hydrofluoric acids absorbs through the skin and causes burns on skin and tissue under it.
- In the air it causes irritation to eyes and respiratory tract. High concentrations can cause severe, painful injuries to the skin, eyes and mucous membranes. Vapours can cause respiratory tract corrosion and pulmonary edema.
- Symptoms may take long time to develop.

H330: Fatal if inhaled

H310: Fatal in contact with skin

H300: Fatal if swallowed

H314: Causes severe skin burns and eye damage

Hazards in Technical services

Get to know the Technical services

Technical services are a part of Mill Services. Technical services are responsible for energy and water supply plants, cleaning services, construction and infrastructure services, service contract control, and co-ordination of planning and information management.

Water treatment plant

Water treatment plant supplies the Tornio plant with water for different needs. For this purpose hazardous chemicals are used, such as:

- Sodium hypochlorite
- Sulfuric acid
- Caustic soda
- Hydrochloric acid

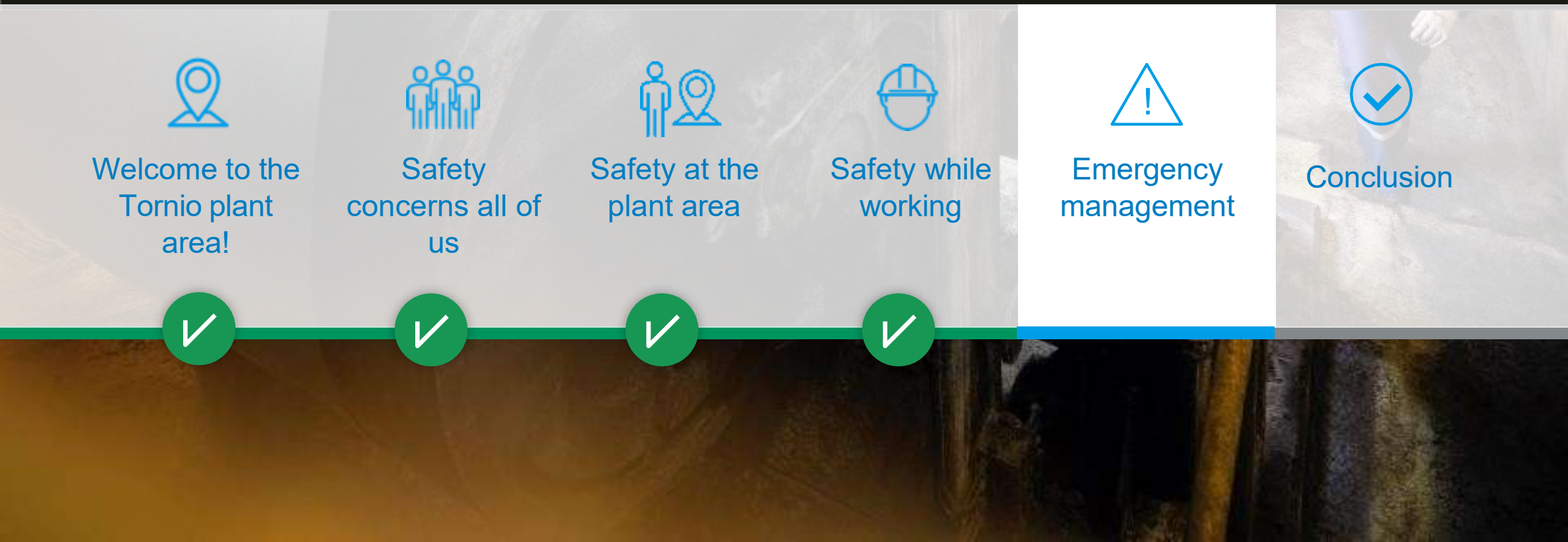
Energy plant

The most important hazards of energy plants are natural gas and carbon monoxide.

For this reason, when working at work sites, the personnel must always have a multi-gas meter with them to detect and prevent exposure to these gases.

There are also high levels of noise in energy plant and it is important to protect your hearing as instructed.

Work safety at the Tornio plant area



Welcome to the Tornio plant area!

Safety concerns all of us

Safety at the plant area

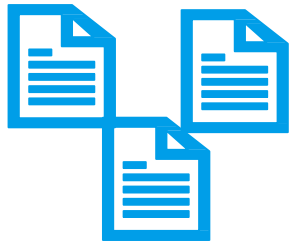
Safety while working

Emergency management

Conclusion

Preventing and preparing is the key

- Outokumpu's primary goal is to prevent incidents from occurring, and it is therefore important that the work permits and check-in procedures are strictly followed.
- Carrying portable meters in locations where different gases can be present is an important part of the emergency preparedness. The plant area and departments also have fixed gas detectors and alarm system.
- Remember that in the case of a leak, people working on the area are notified with a flashing light and an alarm sound. In this case, everyone must leave the danger area immediately. All leaks should also be reported immediately to the control room.



Work permits

Check-in procedures

Meters, detectors and alarm systems

Warning of personnel in danger and emergency situations

Fire

Fire is indicated by a fire alarm, and additional information is provided, if necessary, via an emergency alarm system. The most important thing is to leave the area immediately and go to the evacuation assembly point.

Gas and chemical accidents

Emergency situations are reported through emergency alarm system and/or general alarm signal. Depending the situation, people will be either asked to exit to the evacuation assembly point or stay inside.

Other hazardous and emergency situations

Hazardous and emergency situations such as radiation or emissions are reported, if necessary, through emergency alarm system and/or general alarm signal or in the Outokumpu’s intranet (O’net)

General alarm signal

→ In case of general alarm signal

- If you are outside – move inside
- If you are inside – stay there
- If you can't go inside, move towards side wind from the gas cloud

General emergency signal is one minute long up and down signal that will be repeated several times in case of an emergency

Emergency is over signal is one minute long signal.

In Tornio plant also fires are notified using the same signal

Tornio plant emergency number

When you call to the number, make sure to

- State your name, the department/area you are calling from and the nearest door number
- Describe what has happened
- Advise on how many people were injured and what are their injuries
- Describe the type of help that is needed
- State the accurate accident location
- Inform how the help will be guided to the site

- ❑ **It is important to call the Tornio plant emergency number in order to get help as soon as possible.**
- ❑ After having been alerted, the main gate will send the plant's first aid and fire fighting teams to the location.
- ❑ The main gate will also alert and guide all external rescue vehicles to the accident site.

<u>In case of resuscitation (CPR)</u>, after calling to the Tornio plant emergency number, also call to the emergency number 112 so that emergency care can receive situation information directly from the emergency site.

Accident situations

1. **Evaluate the situation**
2. **Rescue people with imminent danger**
3. **Call for help**
4. **Extinguish**
5. **Guide the rescuers to the location**
6. **Restrict the accident from spreading if you can safely do so**
7. **Give first aid if needed**
   - Resuscitate if needed
   - Stop any major flow of blood
   - If someone is unconscious, turn them on their side
   - Immobilize any fractures
   - Handle the patient with care and talk them in a calming manner to prevent their injuries getting worse

First aid can save lives

Exposure to chemicals

SKIN
Remove immediately contaminated clothing. Wash skin with plenty of running water. Continue washing the skin with water and soap for at least 15 minutes.

SPLASH IN THE EYE
Rinse the eye with plenty of water for 15 minutes, keeping the eye lids open. Prevent the rinse water from entering the clean eye.

RESPIRATORY
Move the person into fresh air, place them in a half-sitting position

INGESTION OF CHEMICALS
If the person is not unconscious or cramping, rinse their mouth and give them a couple of glasses of water. Do not induce vomiting.

Exposure to hydrofluoric acid

SKIN
Remove immediately contaminated clothing. Wash skin with plenty of running water. Then apply immediately substantial amount of calcium gluconate gel over and around skin lesion and rub the area until pain stops. Note that the gel cannot be applied in the eyes. Finally, give six chewing pills containing calcium.

SPLASH IN THE EYE
Rinse the eye with plenty of water for 15 minutes. Give the exposed person six chewing pills containing calcium.

RESPIRATORY
Move the person into fresh air and if necessary give them oxygen or resuscitate them. If the patient is conscious, give them six chewing pills containing calcium

All incidents and accidents must be reported

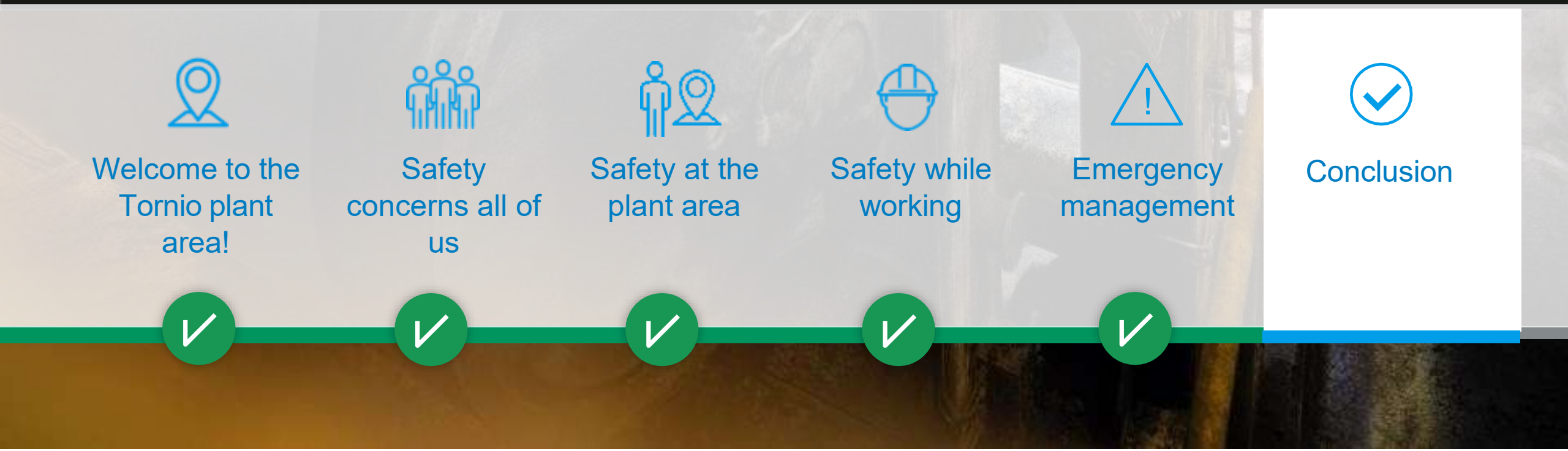
- **All workplace injuries**, including those where self administered first aid is sufficient such as putting a bandaid on a wound.
- **Near-misses**
- **Fires and self-sustained ignitions**
- **Damages to property and environment**
- **Chemical and gas leaks**

Upon arriving at the site, arrange with the area's supervisor or your own supervisor a work place induction that covers at least the following things:

1. moving in/to the area,
2. personal protective equipment requirements,
3. the hazards of the working environment,
4. accident risks,
5. the location of fire-extinguishers and first aid emergency equipment as well as emergency showers,
6. emergency exits and evacuation points,
7. safe places in gas leak situations,
8. waste sorting and recycling points,
9. closest door number,
10. contact persons and the closest control room.

Your actions have an impact

Work safety at the Tornio plant area



Welcome to the Tornio plant area!

Safety concerns all of us

Safety at the plant area

Safety while working

Emergency management

Conclusion

Conclusions

Now you know,

- How different tasks are carried out safely and what are the instructions we all must comply with
- How to evaluate the hazards of work and working environment before starting the work and during it
- What are the specific characteristics and hazards of Tornio plant area

- ✓ Safety before volume
- ✓ Safety starts with me
- ✓ No shortcuts
- ✓ No repeats

SpeakUp –report your concerns!

- At Outokumpu, we play by the rules and ethics is everyone’s responsibility. We are committed to transparency and open communication. If there has been a violation of our Code of Conduct, speak up!
- SpeakUp is an externally operated channel enabling Outokumpu employees and external stakeholders to report breaches of the Outokumpu Code of Conduct or other misconduct. This can be done confidentially and anonymously, if allowed by the local laws and regulations.
- More information and link for reporting: SpeakUp misconduct reporting | Outokumpu