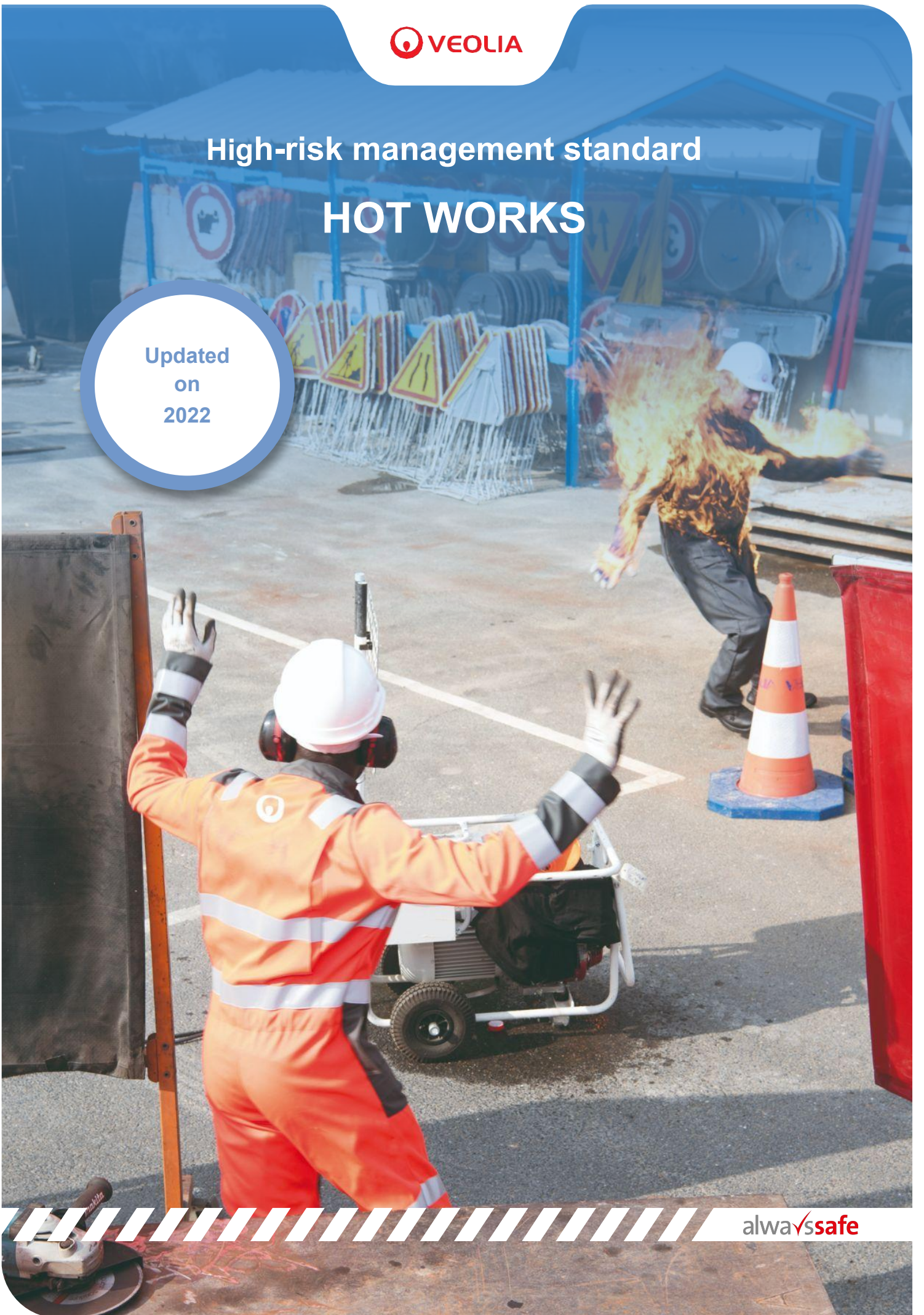


High-risk management standard

HOT WORKS

Updated
on
2022



Over the past few years, several accidents occurring on Veolia sites and on sites where Veolia was operating, highlighted the importance of tackling risks linked to hot work operations. More generally, industry statistics say that hot works are responsible for 1 out of 3 fires.

This standard is intended to ensure that adequate measures are taken to prevent and control the risk of exposure to the identified hazards.

SCOPE:

This document applies to all activities and sites of Veolia.



*Global Occupational
Health & Safety*





LIFE SAVING RULES

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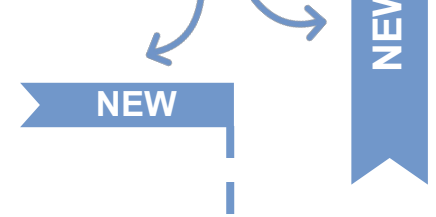


HOT WORKS

I perform hot work only if the fire and explosion risks have been eliminated.

New information

is easy to find with markers and highlights



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NEW

1.0 > Definitions

Fire and explosion are the most important hazards associated with hot works (HW). Health impacts must also be taken into account as toxic components are often present in some materials (e.g., heavy metals). The hazard of flying sparks is to be considered as well.

Tasks considered as hot works operations are any work that can be a source of ignition of flammable material (open flame, spark, heat...) or that is by itself (without presence of flammable material in the workplace) a fire hazard.

The following activities are classified as hot works:

- welding.
- grinding.
- (flame) cutting.
- brazing
- hot seal work.
- spark-producing operation.
- or other activities that generate heat or flames.

This hot works High Risk Management Standard (HRMS) applies to all Veolia personnel and contractors performing any welding, soldering, grinding, (flame) cutting, brazing, hot seal work or other open flame work on all the sites where Veolia has control and responsibility of the work (on public road, on the property of Veolia or any of its subsidiary sites, on customer or third party sites for work under Veolia responsibility). On customer sites where Veolia is operating, Veolia personnel must apply either Veolia procedure or the client's procedure. ... If the client procedure is missing or weaker than Veolia one, Veolia workforce must apply the Veolia HRMS including, for instance, the fire watch after the end the hot work's operation to avoid any fire.

NEW

Outside hot work areas (such as a maintenance workshop), all related operations require a risk assessment and the definition of safety measures formalized by the issuance of a "Hot Work Permit" signed by a "permit authorizer"

NEW

The hot work permit is valid for one single hot work operation and for a maximum duration of one day.

If hot work operations coincide with other HRMS standards for the specific activities, special attention must also be given to the Risk Assessment to take these HRMS standards into consideration.

NEW

**I perform hot work only
if the fire and explosion
risks have been eliminated**
(Life Saving Rules)



2.0 > Main hot work operation hazards

The main hazards of hot work operations are:

- fire & explosion.
- airborne contaminants - toxic smokes (e.g., fluorine compounds, zinc, lead, beryllium).
- flying sparks.

2.0.1 – Fire & explosion

Fire and explosion are the main hazards related with hot works and can be triggered in different ways; **risk assessment is therefore mandatory.**

Hot works are prohibited within an explosive area, or/and whenever combustible materials are present within 10 meters of the hot work activity (all dimensions).

NEW

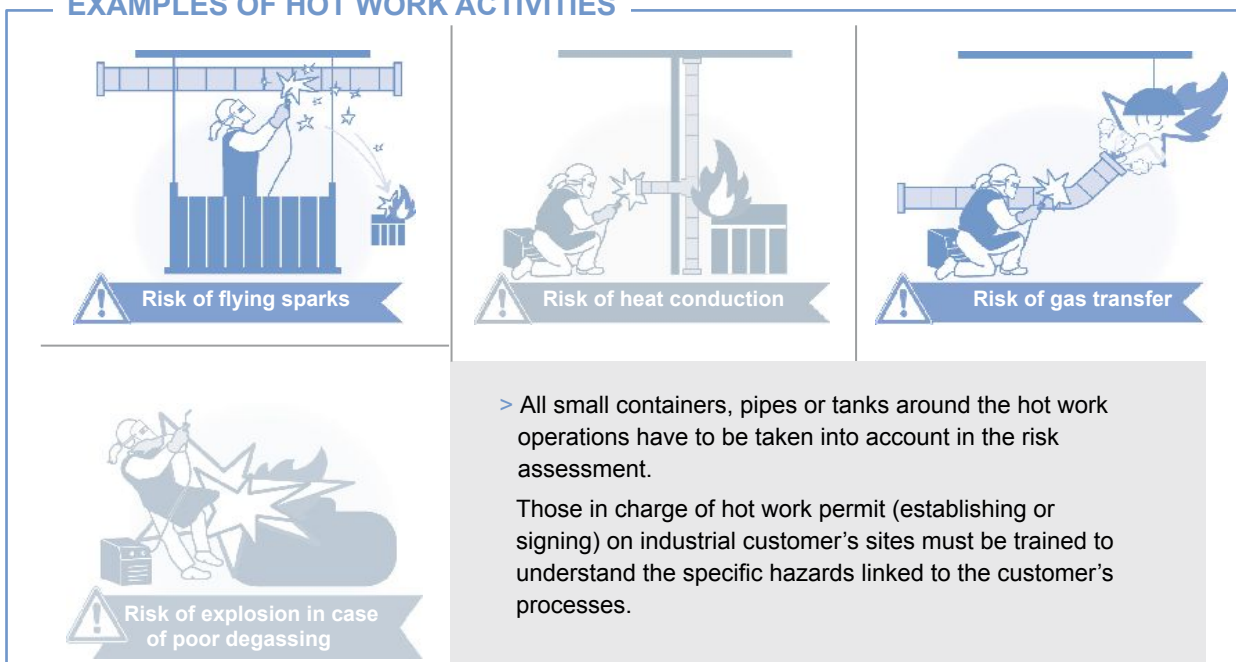
Nevertheless, the risk assessment has to consider whether the hot work operation takes place close to areas where hazardous explosive atmospheres may occur (ATEX).

The risk assessment must also identify stored flammable (e.g., solvents and paints) or combustible materials around the hot work operation area (consider also floors below and above, and walls / doors), but also likelihood that hot work generate "hot flying sparks" (that will ignite a fire if they fall on combustible materials knowing that ignition time could take minutes to hours).

NEW

Combustible materials may be insulated (inside a panel), combustible coating (on each side of a wall / panel), wood, plastics, resins, expanded foams, paints, oil or dust.

EXAMPLES OF HOT WORK ACTIVITIES



Risk of flying sparks

Risk of heat conduction

Risk of gas transfer

Risk of explosion in case of poor degassing

> All small containers, pipes or tanks around the hot work operations have to be taken into account in the risk assessment.

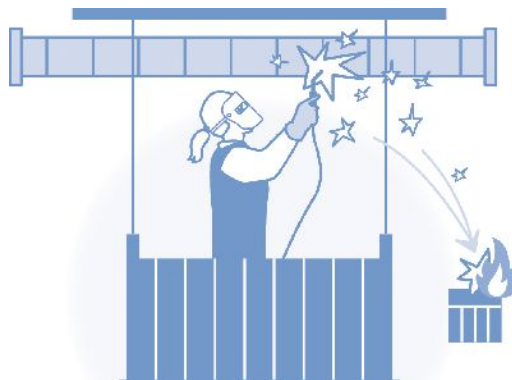
Those in charge of hot work permit (establishing or signing) on industrial customer's sites must be trained to understand the specific hazards linked to the customer's processes.

2.0.2 – Airborne contaminants

Due to the presence of hazardous substances (e.g., coating) or heavy metals (zinc, lead, cadmium, or mercury) in materials used to weld or in objects to be welded, cut or heated, hot work operations can be the source of toxic smokes.

2.0.3 – Other risks

Depending on the hot works, burns are likely to happen considering the exposure to high temperature, flying sparks or electrical risks.



The main hazards of hot work are fire, explosion, hazardous gases, toxic fumes and flying sparks.

3.0 > Risk management

The risk assessment must assist in determining the control measures to be implemented. It must help to:

- identify which workers and areas are exposed at risk.
- determine what sources and processes are causing those risks.
- identify if and what kind of control measures should be implemented.
- check the effectiveness of existing control measures.

Control measures must be ranked from the highest level of protection and reliability to the lowest. This ranking is known as the HIERARCHY OF CONTROL or RISK MANAGEMENT HIERARCHY.

You must always aim to eliminate a hazard that is the most effective control. If it is not achievable, the risk must be minimized by one or a combination of the following:

HIGHEST	ELIMINATION	Can the hot work operation be totally eliminated?	MOST
↑ Health & safety protection ↓	SUBSTITUTION	Can the hot work operation be replaced for a less hazardous method, material or system? (cold work alternatives)	↑ Reliability of control measures ↓
	ENGINEERING	Can the hot work operation be done in a hot work designated area?	
	ISOLATION	Can combustible materials be removed from the area? Can fire protections be put in place to limit fire risks? Can air extraction system be put in place to remove people from the hazards?	
	ADMINISTRATIVE CONTROLS	Is there a designated hot work program owner? Is a hot work permit in place and implemented? Is a fire watch implemented?	
LOWEST	PERSONAL PROTECTIVE EQUIPMENT	Can fire extinguishers be used? Can PPE protect the workers from the hazard or risk?	LEAST

3.0.1 – Fire & explosion prevention

The management of the hot work process and the consequent loss prevention consist of minimizing or protecting combustibles in the vicinity, providing vigilance during and after the operation.

The hot work permit and the related risk assessment must not be just a formality. They are key elements in the prevention of fire or explosion risks. They have to be established before starting the hot work operations and on the location where the hot works will take place.

Except for areas especially designed for hot work activities – hot work designated areas –, a risk assessment must be carried out every time there are new hot work operations taking place.

For hot work designated areas, the risk assessment has to be updated at least once per year. A safety visit to the working area must be carried out prior to the risk assessment.

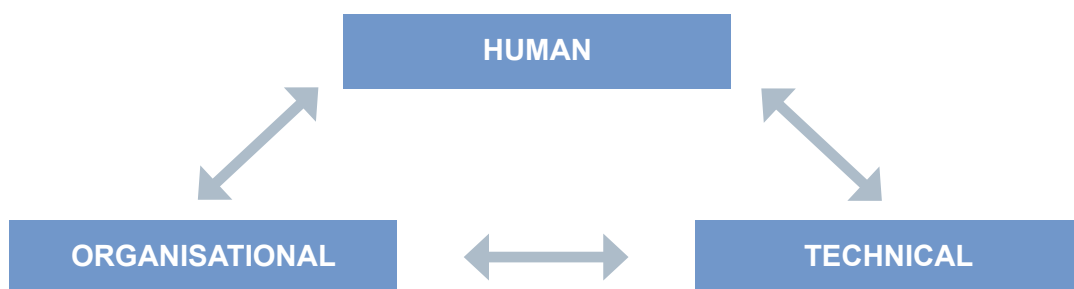
3.0.2 – Hazardous materials

During hot work operations and depending on which materials are used, the smoke productions can contain toxic materials (e.g., heavy metals). For that reason, hot work operations should be performed in a naturally ventilated area.

If not possible (confined space, for example), air extraction or individual breathing equipment must be used.

3.0.3 – Other risks

Hot work operations can also emit hot flying sparks that can burn the skin or the eyes. Hot works operators must wear appropriate PPE (e.g., gloves, apron, and eye protections). Welding arcs and flames emit intense visible, ultraviolet, and infrared radiations. UV radiation in a welding arc will burn unprotected skin just like UV radiation in sunlight. This is true for direct exposure to UV radiation as well as radiation that is reflected from metal surfaces, walls, and ceilings. Thus to perform this kind of operation, workers must wear a welding helmet and welding shells must be installed.



4.0 > Requirements

Application

This high risk management standard applies to all interventions/activities related to Hot Works, exception made when stricter requirements must be complied (such as national regulations, international standards, clients requirements, codes of practices...).

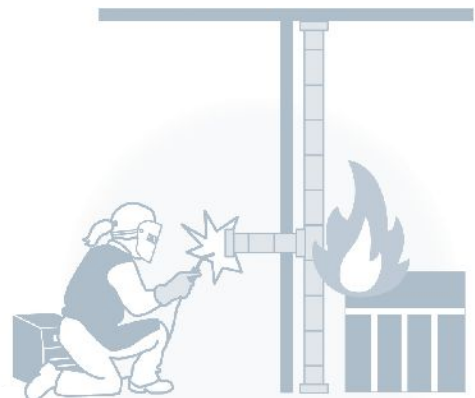
This standard applies to all Veolia entities and to all acting under their responsibility, such as managers, employees, contractors, suppliers, visitors or any other person acting in the name of a Veolia entity.

NEW

Preliminary requirements

- Use of the word “**must**” within this standard means a requirement is mandatory.
- Use of the word “**should**” within this standard means the primary intent is that the requirement is mandatory but specific circumstances may mean implementation of the requirement is not reasonably practicable.

This standard applies to all managers, employees, contractors, visitors or any other person working on the scope of Veolia.

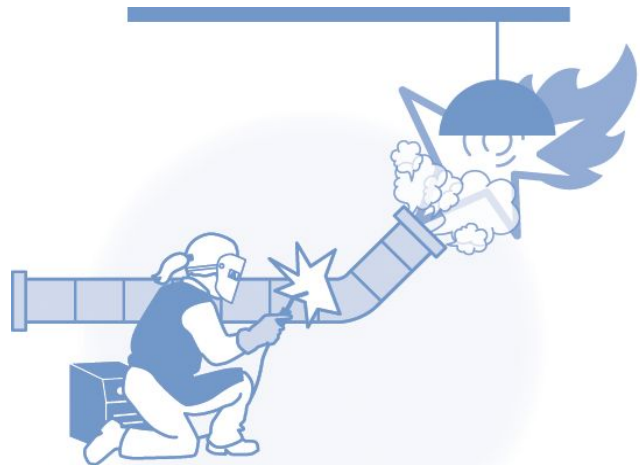


4.0.1 – Human requirements

1. **The Life-Saving Rule relating to this standard must be rolled out to all employees and contractors.**
2. Before starting a hot work activity, a mental safety assessment (MSA) must be performed and the HW must be stopped if it's unsafe.
3. Hot work must be performed only if the fire and explosion risks have been eliminated.
4. All employees and managers involved in hot works must be trained and must receive a refresher training (at least once every three years). Trainings must address hot work hazards, preventive and protective measures, hot work permitting system, as well as emergency response measures. All contractors involved in the hot work management program must receive an induction on site before they are allowed to perform hot works activities.
5. All persons involved in work in Hot Works (procurement, sales, design & engineering, operators, managers, contractors, etc.) must follow the module of this standard in e-learning or face-to-face. The e-learning must be refreshed every 3 years.
6. Employees conducting hot work operations must wear proper protective equipment and clothing (gloves, eye protections, helmets or hand shields, respiratory protection, fire specific clothes...).
7. All authorised workers, including those supervising the related operations (Hot works and the attendant), must receive specific training relevant to their duties (entry supervisor, attendant or authorized entrant). The requirement also applies to workers from permanent or regular contractors that are involved in Hot works operations. Training must be recorded, maintained and periodically renewed every 5 years or whenever there is a change in the procedure.
8. Workers from irregular contractors that are involved in Hot works operations must receive a specific hot works awareness training adapted to the work situation and the risks.
9. In order to ensure that this standard is properly applied to all Hot Works observations (such as safety visits, audits, etc.) must be carried out regularly.

10. Observation (such as safety visits, audits, etc.) carried out during the intervention must take into account the behaviour of those observed.
11. Observations must lead to:
 - the activity being stopped until compliance is restored in case of deviations from critical requirements of this standard;
 - immediate remediation and/or corrective action plan in case of deviations from requirements of this standard others than critical;
 - recognition of existing good-practices through sharing and "copy & adapt".


Anyone performing hot work must have completed a suitable training.



4.0.2 – Organisational requirements

1. Purchase, design, installation and assembly of equipment (including hired and contracted equipment) must meet the requirements of this standard.
2. A systematic job safety analysis (JSA) must be carried out by the team executing the work (employees of Veolia and/or contractors) prior to starting the job. It must include the review of the existing procedures to be applied.
3. A site hot work management program must be in place and supported by a written procedure describing roles and responsibilities within the hot work program.
4. A hot work program owner must be appointed to each Veolia site where such works are performed.
5. Hot work must be authorized only after all existing cold work alternatives have been assessed.
6. Whenever cold work alternatives are not possible, hot work must be located within a hot work designated area, that must remain free of combustible, ignitable or flammable materials. If required for work, combustible, ignitable or flammable materials must be stored only in cabinets approved for those applications. Monthly inspections must be implemented in hot work designated areas, to evidence that they remain free of combustibles.
7. Hot works must be prohibited in the following locations and situations: within an explosive area, or/and whenever combustible materials are present within 10 meters of the hot work activity (all dimensions)
8. Whenever cold work alternatives or relocation of hot work into hot work designated areas are not possible, a hot work permit must be issued. The hot work permit is a tool ensuring that a risk assessment will be conducted prior to authorizing the hot works, and that a plan is developed to conduct the hot works safely, by listing precautions to be taken in the hot work area. The hot work permit system must meet the requirements of the local authorities having jurisdiction and / or of this HRMS, whichever is more stringent. Hot work permits must remain posted on the hot work area as long as the hot works are ongoing, (with a maximum duration of one day) in order to serve as a reference for precautions to be followed.
9. Hot work permits must be issued for a duration not exceeding one day. Whenever there is a shift change during that day, a permit authoriser must review safety conditions, check that all mitigations remain in place at the beginning of the new shift, and resign the permit. If, at any time during the hot work, the conditions under which the permit was issued change, hot work operations must be stopped until conditions return to those under which the permit was issued, or a revised permit must be issued to reflect the changed conditions. Hot work permits must be kept for at least one year as they might be required by the insurance companies.
10. Hot works performed outside of hot work designated areas must be authorized by a hot work permit authorizer who must be a competent person.

11. **Hot works must not be performed** on used drums, barrels, tanks or other containers until they have been thoroughly cleaned and/or inerted and hot work permit authorizer has definitively determined there are no flammable or combustible substances / materials present.
12. Whenever hot works are performed outside of hot work designated areas, verify during pre-job risk analysis that the fire protection and/or detection systems are available and in service (including onsite fire water supplies and sprinkler systems when they exist). If protection is impaired or not provided, then delay the hot work until the fire protection is restored
13. For any hot works taking place outside of hot work designated areas, the permit authorizer must verify that all mitigations defined during the pre-job risk analysis embedded with the hot work permit are in place, before he can authorize the hot works.
14. No hot works must be performed within an explosive area. The rules is therefore to clear explosive conditions before the hot work can take place (through cleaning / inerting). However, whenever hot works needs to be performed on cleaned / inerted equipments or occupancies where ignitable liquids or flammable gas were used, atmospheric checks for Lower Flammable/Explosive Limits (LFL/LEL) must be conducted prior to, and continuously during hot works. Whenever LFL/LEL readings exceed 10%; hot works must be immediately stopped, and actions taken immediately to clear the flammable/explosive content from the work area.
15. Before hot works performed outside of hot work designated areas can be authorized by the permit authorizer, the area must be secured within 10 meters of the hot work activity (all dimensions), namely:
 - the floor, drums, barrels, tanks or other containers, pipes must be purged, drained and cleaned.
 - combustible, ignitable and/or flammable materials must be removed, as well as their accumulation (debris, dust, residues, spills / leaks).
 - combustibles that cannot be moved (including cover floors, walls) or ignition sources that cannot be contained must be shielded with approved non-combustible / fire-resistant welding pads or blankets or curtains.
 - explosive atmosphere or potential sources of flammable gas, ignitable liquids and / or combustible dust must be eliminated (which includes, but is not limited to de-energizing equipment - may also include draining / purging).
 - doors must be closed and openings in the floor and walls must be covered with non-combustible / fire-resistant screens.
 - special care also has to be done on ventilation: the ventilation (extraction/blowing) must be protected in order that no combustible reach hot work area and no sparks from the hot work reach combustible materials.
 - stop conveyors that can carry combustibles materials.

- 
16. For hot works performed outside a hot work designated area, which are taking place in an area fitted with an automatic deluge system, extra care must be taken to prevent inadvertent triggering of the deluge during the hot works. Based on the fire risk assessment, it may be necessary to by-pass the detection device of the deluge system (IR, smoke detectors, etc.) as long as hot works are taking place in the area. This must be managed using a lock-out / tag out procedure for the deluge automatic detection system. A final verification must be performed at the end of the hot works to ensure that the automatic detection of the deluge system is put back into service.
 17. For hot works performed outside of an hot work designated area, and whenever this cannot be made fire safe, the hot work operation should not be performed alone. A fire guard must be appointed and established for the full duration of the work. Fire safe nature of working area must be determined only by a hot work permit authorizer.
 18. A post-work fire watch is mandatory for any hot work performed outside of hot work designated areas. For such areas, the area where the hot works have taken place must be checked within 30 minutes after the end of the hot work task, and again at least one more time within 2 hours after the hot work have ended.
 19. During hot work activities, a competent person must perform a safety visit to ensure that the initial settings and conditions are maintained.
 20. Safety visits must include work behaviour observations and any need for additional specific training must integrate the results of those observations.
 21. Employees whose access is granted in hot work areas (designated ones or the ones subjected to permitting) must be warned of the PPE requirements into those areas through signage at the entrance of hot work areas.
 22. A **management of change** procedure must be in place for changes of processes, equipment or safety devices with impact on the hot works safety. **Technical and/or organisational changes to a hot work must lead to a review of the existing risk assessment.**
 23. A system must be provided requiring formal reporting and investigation of breaches associated with hot works.
 24. An emergency drill must be annually performed with a focus on HW activities.
 25. **A written emergency plan** must be established, validated and communicated to all involved before any intervention.
 26. Potential accident scenarios must be identified and emergency measures must be defined and ready to be deployed. On industrial sites, this plan must be developed with the client.
 27. Emergency plans should be tested regularly.

NEW

NEW

4.0.3. Technical requirements

1. In addition to PPE defined during the risk analysis, all workers in confined spaces must have an individual multi-gas detector and a means of communication with the supervisor.
2. Whenever possible, fire-resistant screens or curtains/shields must be used around welding areas to protect passing people from flying sparks or glare and to prevent sparks and incandescent particles from "flying away" and/or falling into the lower or upper level technical floors (in the case of slatted floors) to ultimately come into contact with combustible materials. Materials used for hot work operations and for protection (resistive tarpaulins, curtains...) must be maintained and checked periodically.
3. **Appropriate fire extinguisher equipment must be readily available.** Supplemental fire extinguishers within hot work designated areas must be provided, ensuring they are rated and sized appropriately for the hazards.
4. Ventilation, conveying systems or automatic transport systems must be protected or shutdown if they are within the area where hot work takes places to prevent that ignition sources are transported outside of hot work area. If ventilation remains needed for an enclosed hot work site, a temporary ventilation system, constructed of non-combustible components, must be used.
5. An air extraction system must remain in place to avoid any worker to be exposed to toxic fumes and/or smokes generated by the hot work activities. When this is not achievable, workers must be protected with individual breathing equipment.



Technical requirements include recommendation on materials to be used for the protection of the work site, the means for fire extinguishing equipment and protection of ventilation, conveying or automatic transportation systems.

5.0 > Glossary

Authorized:

Means authorized by Veolia management to engage in hot work operations in a specified location.

Cold work alternatives method:

A non hot work method of performing work that doesn't post a fire or explosion hazard.

NEW

Combustible materials:

Solid, liquid or gas that can burn reacting with a flame or a spark, in contact with hot spot, heat or any other ignition sources (e.g., wood, expanded foam, plastics, paper, cardboard, paints, oil, ethanol, propane, hydrogen, LPG).

Competent person:

A person who has acquired the knowledge and skills to carry out the task through training or experience. Competency is a combination of these attributes that enables a worker to identify both the risks arising from a situation and the measures needed to deal with them.

Confined Space:

A space that is large enough and configured so that an employee can bodily enter and perform assigned work, and has limited means for entry or exit, and is not designed for continuous employee occupancy.

Designated Hot Work Area:

A permanent location designed and/or approved for Hot Work operations such as a maintenance shop or detached outside location that is of non- combustible construction, essentially free of combustible and flammable contents, suitably segregated from adjacent areas (welding curtains or non-combustible walls), well ventilated and fitted with local exhaust ventilation.

Fire Guard:

Assigned staff responsible for ensuring that safe conditions are maintained during hot work operations, for watching for fires in all exposed areas during and for a specified period of time following cessation of hot work operations, and for responding to incipient stage fires.

Fire protection:

"Fire Protection" shall be understood under this standard as mobile extinguishers and/ or fire fighting hoses, and / or sprinklers. They must be available in the hot work area.

NEW

Fire safe area:

An area that is made fire safe by removing or protecting combustibles from ignition sources.

Hot Work:

Any temporary or routine work (operation) involving open-flame, producing hot surfaces, and/or generating sparks or molten material of sufficient energy to ignite combustible, ignitable, and/or flammable materials. Examples of hot work operations include torch-applied roofing, pipe brazing, pipe soldering, arc and torch welding, radial-mechanical and torch cutting, grinding, and post-weld heating using a gas-fired burner or electrical resistance heater. For ignition-sensitive materials such as low-flash point ignitable liquids, flammable gas/vapor, and some combustible dusts, hot work may be expanded to include low-energy hot work ignition sources.

NEW

Hot Work program:

Program establishing guidelines to guard against fires from heat-producing operations performed by using portable equipment away from the designated area.

Hot Work Permit Authorizer:

Person appropriately trained who is qualified and authorized by Veolia management to issue hot work permits.

Hot work program owner:

Management line representative in charge of enforcing the facility hot work program requirements

NEW

Incipient Stage Fire:

A fire in the incipient or beginning stage and which can be controlled or extinguished by portable fire extinguishers, or Class II stand pipe or fire hose systems without the need for protective clothing or breathing apparatus.

Lock-out/Tag-out:

Lock-out/Tag-out is a safety procedure which is used to protect employees involved in service and maintenance activities against the unexpected start-up of machines or equipment, or the release of stored energy that could cause injuries.

Mental Safety Assessment:

A Mental Safety Assessment is an individual action taken before beginning any activity, task or job.

The three main steps are:

- 1- STOP and Think
- 2- ANALYZE any Potential Problems
- 3- PERFORM the Job Safely.

NEW

Maximum Allowable Concentration: Occupational exposure limits of toxic substances according to local/national regulations.

Permit:

A document issued by a competent person for the purpose of authorizing a specific activity (i.e. hot work).

Qualified person:

One who is **BOTH** competent **AND** in possession of a recognized degree, certificate, or professional standing.

APPENDIX 1 > Applicability and compliance assessment

> REQUIREMENTS	C	NC	Criticality
HUMAN			
1. The Life-Saving Rule relating to this standard must be rolled out to all employees and contractors.			1: Critical
2. Before starting a hot work activity, a mental safety assessment (MSA) must be performed and the HW must be stopped if it's unsafe.			1: Critical
3. Hot work must be performed only if the fire and explosion risks have been eliminated.			1: Critical
4. All employees and managers involved in hot works must be trained and must receive a refresher training (at least once every three years). Trainings must address hot work hazards, preventive and protective measures, hot work permitting system, as well as emergency response measures. All contractors involved in the hot work management program must received an induction on site before they are allowed to perform hot works activities.			1: Critical
5. All persons involved in work in Hot Works (procurement, sales, design & engineering, operators, managers, contractors, etc.) must follow the module of this standard in e-learning or face-to-face. The e-learning must be refreshed every 3 years.			2: Important
6. Employees conducting hot work operations must wear proper protective equipment and clothing (gloves, eye protections, helmets or hand shields, respiratory protection, fire specific clothes...).			1: Critical
7. All authorised workers, including those supervising the related operations (Hot works and the attendant), must receive specific training relevant to their duties (entry supervisor, attendant or authorized entrant). The requirement also applies to workers from permanent or regular contractors that are involved in Hot works operations. Training must be recorded, maintained and periodically renewed every 5 years or whenever there is a change in the procedure.			1: Critical
8. Workers from irregular contractors that are involved in Hot works operations must receive a specific hot works awareness training adapted to the work situation and the risks.			1: Critical
9. In order to ensure that this standard is properly applied to all Hot Works observations (such as safety visits, audits, etc.) must be carried out regularly.			2: Important
10. Observation (such as safety visits, audits, etc.) carried out during the intervention must take into account the behaviour of those observed.			2: Important
11. Observations must lead to: <ul style="list-style-type: none"> • the activity being stopped until compliance is restored in case of deviations from critical requirements of this standard; • immediate remediation and/or corrective action plan in case of deviations from requirements of this standard others than critical; • recognition of existing good-practices through sharing and "copy & adapt" 			1: Critical

C: Compliant

NC: Non compliant

P: Priority as defined

1: Critical = Requirement that is fundamental to be deployed to avoid serious incidents.

2: Important = Requirement that is essential and should be implemented to the extent possible to avoid incidents.

3: Useful = Requirement that has an effective role in strengthening prevention

APPENDIX 1 > Applicability and compliance assessment

> REQUIREMENTS	C	NC	Criticality
ORGANISATIONAL			
1. Purchase, design, installation and assembly of equipment (including hired and contracted equipment) must meet the requirements of this standard.			1: Critical
2. A systematic job safety analysis (JSA) must be carried out by the team executing the work (employees of Veolia and/or contractors) prior to starting the job. It must include the review of the existing procedures to be applied.			2: Important
3. A site hot work management program must be in place and supported by a written procedure.			1: Critical
4. A hot work program owner must be appointed to each Veolia site where such works are performed.			1: Critical
5. Hot work must be authorized only after all existing cold work alternatives have been assessed.			1: Critical
6. Whenever cold work alternatives are not possible, hot work must be located within a hot work designated area, that must be remain free of combustible, ignitable or flammable materials. If required for work, combustible, ignitable or flammable materials must be stored only in cabinets approved for those applications. Monthly inspections must be implemented in hot work designated areas, to evidence that they remain free of combustibles.			1: Critical
7. Hot works must be prohibited in the following locations and situations: within an explosive area, or/and whenever combustible materials are present within 10 meters of the hot work activity (all dimensions)			1: Critical
8. Whenever cold work alternatives or relocation of hot work into hot work designated areas are not possible, a hot work permit must be issued. The hot work permit is a tool ensuring that a risk assessment will be conducted prior to authorizing the hot works, and that a plan is developed to conduct the hot works safely, by listing precautions to be taken in the hot work area. The hot work permit system must meet the requirements of the local authorities having jurisdiction and / or of this HRMS, whichever is more stringent. Hot work permits must remain posted on the hot work area as long as the hot works are ongoing, (with a maximum duration of one day) in order to as a reference for precautions to be followed.			1: Critical
9. Hot work permits must be issued for a duration not exceeding one day. Whenever there is a shift change during that day, a permit authoriser must review safety conditions, check that all mitigations remain in place at the beginning of the new shift, and resign the permit. If, at any time during the hot work, the conditions under which the permit was issued change, hot work operations must be stopped until conditions return to those under which the permit was issued, or a revised permit must be issued to reflect the changed conditions. Hot work permits must be kept for at least one year as they might be required by the insurance companies.			1: Critical
10. Hot works performed outside of hot work designated areas must be authorized by a hot work permit authorizer who must be a competent person.			1: Critical
11. Hot works must not be performed on used drums, barrels, tanks or other containers until they have been thoroughly cleaned and/or inerted and hot work permit authorizer has definitively determined there are no flammable or combustible substances / materials present.			1: Critical
12. Whenever hot works are performed outside of hot work designated areas, verify during pre-job risk analysis that the fire protection and/or detection systems are available and in service (including onsite fire water supplies and sprinkler systems when they exist). If protection is impaired or not provided, then delay the hot work until the fire protection is restored.			1: Critical
13. For any hot works taking place outside of hot work designated areas, the permit authorizer must verify that all mitigations defined during the pre-job risk analysis embedded with the hot work permit are in place, before he can authorize the hot works.			1: Critical
14. No hot works must be performed within an explosive area. The rules is therefore to clear explosive conditions before the hot work can take place (through cleaning / inerting). However, whenever hot works needs to be performed on cleaned / inerted equipments or occupancies where ignitable liquids or flammable gas were used, atmospheric checks for Lower Flammable/Explosive Limits (LFL/LEL) must be conducted prior to, and continuously during hot works. Whenever LFL/LEL readings exceed 10%; hot works must be immediately stopped, and actions taken immediately to clear the flammable/explosive content from the work area.			1: Critical

APPENDIX 1 > Applicability and compliance assessment

> REQUIREMENTS	C	NC	Criticality
ORGANISATIONAL			
<p>15. Before hot works performed outside of hot work designated areas can be authorized by the permit authorizer, the area must be secured within 10 meters of the hot work activity (all dimensions), namely:</p> <ul style="list-style-type: none"> • the floor, drums, barrels, tanks or other containers, pipes must be purged, drained and cleaned. • combustible, ignitable and/or flammable materials must be removed, as well as their accumulation (debris, dust, residues, spills / leaks). • combustibles that cannot be moved (including cover floors, walls) or ignition sources that cannot be contained must be shielded with approved non-combustible / fire-resistant welding pads or blankets or curtains. • explosive atmosphere or potential sources of flammable gas, ignitable liquids and / or combustible dust must be eliminated (which includes, but is not limited to de-energizing equipment - may also include draining / purging). • doors must be closed and openings in the floor and walls must be covered with non-combustible / fire-resistant screens. • special care also has to be done on ventilation: the ventilation (extraction/blowing) must be protected in order that no combustible reach hot work area and no sparks from the hot work reach combustible materials. • stop conveyors that can carry combustibles materials. 			1: Critical
<p>16. For hot works performed outside a hot work designated area, which are taking place in an area fitted with an automatic deluge system, extra care must be taken to prevent inadvertent triggering of the deluge during the hot works. Based on the fire risk assessment, it may be necessary to bypass the detection device of the deluge system (IR, smoke detectors, etc) as long as hot works are taking place in the area. This must be managed using a lock-out / tag out procedure for the deluge automatic detection system. A final verification must be performed at the end of the hot works to ensure that the automatic detection of the deluge system is put back into service.</p>			1: Critical
<p>17. For hot works performed outside of an hot work designated area, and whenever this cannot be made fire safe, the hot work operation should not be performed alone. A fire guard must be appointed and established for the full duration of the work. Fire safe nature of working area must be determined only by a hot work permit authorizer.</p>			1: Critical
<p>18. A post-work fire watch is mandatory for any hot work performed outside of hot work designated areas. For such areas, the area where the hot works have taken place must be checked within 30 minutes after the end of the hot work task, and again at least one more time within 2 hours after the hot work have ended.</p>			1: Critical
<p>19. During hot work activities, a competent person must perform a safety visit to ensure that the initial settings and conditions are maintained.</p>			1: Critical
<p>20. Safety visits must include work behaviour observations and any need for additional specific training must integrate the results of those observations.</p>			2: Important
<p>21. Employees whose access is granted in hot work areas (designated ones or the ones subjected to permitting) must be warned of the PPE requirements into those areas through signage at the entrance of hot work areas.</p>			2: Important
<p>22. A management of change procedure must be in place for changes of processes, equipment or safety devices with impact on the hot works safety. Technical and/or organisational changes to a hot work must lead to a review of the existing risk assessment.</p>			3: Useful
<p>23. A system must be provided requiring formal reporting and investigation of breaches associated with hot works.</p>			3: Useful
<p>24. An emergency drill must be annually performed with a focus on HW activities.</p>			2: Important
<p>25. A written emergency plan must be established, validated and communicated to all involved before any intervention.</p>			1: Critical
<p>26. Potential accident scenarios must be identified and emergency measures must be defined and ready to be deployed. On industrial sites, this plan must be developed with the client.</p>			1: Critical
<p>27. Emergency plans should be tested regularly.</p>			2: Important

APPENDIX 1 > Applicability and compliance assessment

> REQUIREMENTS	C	NC	Criticality
TECHNICAL			
1. In addition to PPE defined during the risk analysis, all workers in confined spaces must have an individual multi-gas detector and a means of communication with the supervisor.			1: Critical
2. Whenever possible, fire-resistant screens or curtains/shields must be used around welding areas to protect passing people from flying sparks or glare and to prevent sparks and incandescent particles from "flying away" and/or falling into the lower or upper level technical floors (in the case of slatted floors) to ultimately come into contact with combustible materials. Materials used for hot work operations and for protection (resistive tarpaulins, curtains...) must be maintained and checked periodically.			1: Critical
3. Appropriate fire extinguisher equipment must be readily available. Supplemental fire extinguishers within hot work designated areas must be provided , ensuring they are rated and sized appropriately for the hazards.			1: Critical
4. Ventilation, conveying systems or automatic transport systems must be protected or shutdown if they are within the area where hot work takes places to prevent that ignition sources are transported outside of hot work area. If ventilation remains needed for an enclosed hot work site, a temporary ventilation system, constructed of non-combustible components, must be used.			1: Critical
5. An air extraction system must remain in place to avoid any worker to be exposed to toxic fumes and/or smokes generated by the hot work activities. When this is not achievable, workers must be protected with individual breathing equipment.			1: Critical



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HOT WORK CERTIFICATE	Rev:A	Date: 07/07/22	

Document to be completed in addition to work Permit if Hot Work activities are identified.
 The measures set out in this permit are applicable in addition to those specified in the HSE Plan and/or Work Permit.

Associated Work Permit n°:

DESCRIPTION OF WORK (if any points differ from work permit)

Name of contractor:	Requester Name:	Date of request:
Area:		
Duration of work:	Date and starting hour:	Date and ending hour (forecast):
Nature of the work:		
Number of intervener workers:	Permit Holder Name:	

IDENTIFICATION OF RISKS ASSOCIATED WITH WORK AREA

<input type="checkbox"/> Presence of combustible or flammable materials or structures <input type="checkbox"/> Heat conduction to combustible or flammable materials along the route of treated piping or ductwork	<input type="checkbox"/> Possible discharge of sparks <input type="checkbox"/> Work in a cavity or recess (alcove) <input type="checkbox"/> Other:...
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NATURE OF WORK

<input type="checkbox"/> Welding	<input type="checkbox"/> Flam-cutting	<input type="checkbox"/> Cross cutting	<input type="checkbox"/> Torch	<input type="checkbox"/> Other...
<input type="checkbox"/> Grinding	<input type="checkbox"/> Drilling	<input type="checkbox"/> Electric arc	<input type="checkbox"/> Oxyacetylene	

PREVENTIVE MEASURES

<input type="checkbox"/> Marking worksite <input type="checkbox"/> Keeping combustible/flammable materials at distance <input type="checkbox"/> Use of protective shielding	<input type="checkbox"/> Use of fire-retardant tarps <input type="checkbox"/> Extinguishers within immediate reach: Type: Quantity:	<input type="checkbox"/> Flexible piping connected to fire water supply <input type="checkbox"/> Oxyacetylene: presence of flame-arrest valves <input type="checkbox"/> Other:...
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Measures applicable to ATEX zones

<input type="checkbox"/> Perform preparatory tasks from ATEX zones <input type="checkbox"/> Remove combustible material in containers or via piping (mandatory for zones 0; 1; 20 and 21)	<input type="checkbox"/> Implement an extinguishing system (zones 2 and 22) <input type="checkbox"/> Cover associated sources with protective materials <input type="checkbox"/> Perform inerting of the piping/tank <input type="checkbox"/> Eliminate dust from the work area	<input type="checkbox"/> Place portable detection devices near the most exposed sources of combustibles (mandatory in zone 2) <input type="checkbox"/> Monitor the absence of accumulated dust and dust conditions in the work area (mandatory in zone 22)
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CHECKS AND INSPECTIONS BEFORE STARTING WORK

Check the condition of the material used and ensure it is compliant
 Disable automated firefighting and detection systems (if required based on the Risk Assessment and after approval from QHSE and Plant manager)
 Advise the appropriate services about taking these safety systems offline
 Place alarm devices and firefighting equipment (appropriate type extinguisher) within immediate reach
 Designate a safety coordinator for the work:

	VEOLIA (indicate person's name)	External enterprise	Date
<input type="checkbox"/> Who is marking off danger zone?	<input type="checkbox"/> :	<input type="checkbox"/>	
<input type="checkbox"/> Who is providing signate?	<input type="checkbox"/> :	<input type="checkbox"/>	
<input type="checkbox"/> Who is removing flammable substances?	<input type="checkbox"/> :	<input type="checkbox"/>	
<input type="checkbox"/> Who is covering fixed combustible structures?	<input type="checkbox"/> :	<input type="checkbox"/>	
<input type="checkbox"/> Who is providing appropriate firefighting equipment?	<input type="checkbox"/> :	<input type="checkbox"/>	

VERIFICATION AND MONITORING AFTER PERFORMING WORK

<input type="checkbox"/> Stow equipment and clean-up work area <input type="checkbox"/> Re-enable sprinklers <input type="checkbox"/> Re-enable detection systems	<p>Time of completion of hot-point work:</p> <input type="checkbox"/> Continuous monitoring for one hour following completion of hot-point work <input type="checkbox"/> Regular checks for minimum of one additional hour <input type="checkbox"/> Regular checks for two hours in sensitive areas (storage flammable liquids, etc.)
Time of each check	1. 2. 3. 4.
Monitoring person responsible:	Signature:

VALIDATION OF PERMIT TO WORK

Permit Requester	Permit Holder	Shift Leader	Permit Issuer (Maint./Process Mngr.)	QHSE Advisor
Name: Company: Date: Time: Signature:	Name: Company: Date: Time: Signature:	Name: Company: VEOLIA Date: Time: Signature:	Name: Company: VEOLIA Date: Time: Signature:	Name: Company: VEOLIA Date: Time: Signature:

ACTUAL DURATION OF PERMIT

Start date: Hour:	Finish date: Hour:
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Drawn up by: xx	Checked by: xx	Approved by: xx
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	HOT WORK CERTIFICATE	Rev:A	Date: 07/07/22	

**SAFETY GUIDELINES FOR WORK UNDER A HOT WORK PERMIT
TO BE FOLLOWED WITHOUT EXCEPTION BY ALL WORKERS**

IN CASE OF ALARM
The Permit is automatically suspended upon emergency alarm sound. The Permit Holder must check with the HSE Advisor before recommencing work.

BEFORE THE WORK

Take measures appropriate to the nature of the work at hand, in particular:

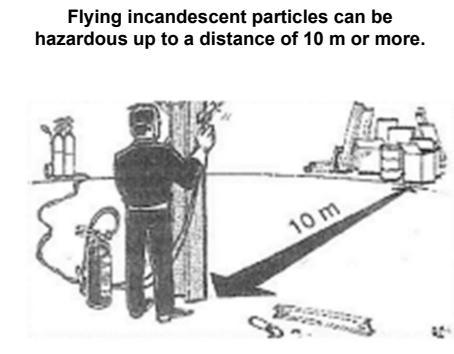
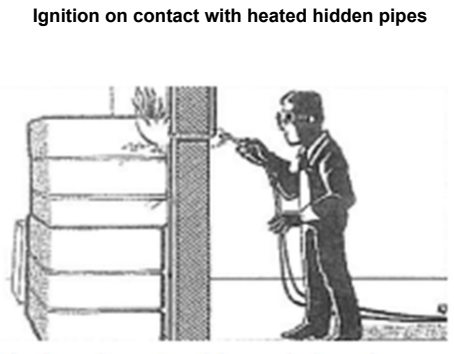
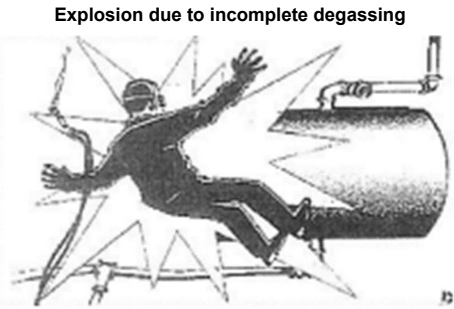
- ❑ 1- Check that all equipment is in perfect working order.
- ❑ 2- Remove (to a point outside of radius of protection), protect or cover with non-combustible or fire-retardant materials all flammable or combustible element and structures including those positioned behind partitions near the work area. If appropriate, spray down the floor and protective tarps.
- ❑ 3- Plug all openings, gaps and slots using sands, fire-retardant tarps, etc.
- ❑ 4- Ensure thorough degassing if the work is to be performed over or inside a cavity or recess (reservoir, duct).
- ❑ 5- Plug all openings, gaps and slots (sand, tarp, metal plate).
- ❑ 6- If the work is performed on metallic ductwork, eliminate from the ducts all combustible or flammable materials they contain.
- ❑ 7- Take appropriate measures to prevent triggering of the automatic detection or sprinkler system.
- ❑ 8- Designate a safety coordinator who is knowledgeable about safety measures.
- ❑ 9- Depending on the nature of the work, ensure that alarm devices and firefighting equipment are within reach including, at minimum:
 - o 1 CO2 extinguisher, 9 L, for electrical fires
 - o 1 extinguisher appropriate for putting out incipient fires

DURING THE WORK

- ❑ 10- Monitor closely all locations potentially exposed to flying incandescent materials.
- ❑ 11- place hot objects only on heat-tolerant supports that are also non-heat-propagating.
- ❑ 12- Do not hook the welding torch on pressure-regulating valves (while operating) or near gas canisters or place it on the floor.

AFTER THE WORK

- ❑ 13- Re-enable all automatic detection or sprinkler systems that were disabled.
- ❑ 14- carefully inspect the immediate area, adjacent rooms and any other locations that may have been exposed to flying incandescent particles or transferred heat.
- ❑ 15- Maintain close monitoring for at least 2 hours following completion of the work.
- ❑ 16- Advise personnel responsible for subsequent rounds to pay special attention to the area and ensure that site monitoring and surveillance procedures are strictly followed.
- ❑ 17- If the work is carried out in an unmonitored area, then the individual performing the work is to check before leaving the area to ensure that there is no risk of fire spreading.



- ATEX ZONES**
- Preparatory work not requiring direct contact with the fixed components is to be performed **outside of the ATEX zone.**
 - In situations involving the inverting of nitrogen in piping take all of the following usual precautions:
 1. Inverting of the piping (followed by ventilation where appropriate)
 2. Performance of the work
 3. Inerting of the piping
 4. Flammable substances (gas, liquid or purchased solid) returned to the piping.
 - In the event that it is necessary to remove dust before starting the work, use a damp rag or an ATEX-certified vacuum system.
 - Maintain a portable detector as close as possible to the task area if the work is performed in a zone 2 environment.

IMPORTANT RECOMMENDATIONS

The Head of department is never to allow torch or electric arc work to begin until the corresponding HOT WORK PERMIT has been completed in full, signed off and issued. He must verify that:

- The work is compatible with regulatory requirements
- The site insurance effectively covers the work both during the work and after its completion

If the work is performed by an external enterprise, the latter is to check its own civil liability insurance coverage. H&S Supervisor and workers are not to allow torch or electric arc work to begin before obtaining a hot work permit and verifying all measures taken to ensure the safety of the work. They must be sure to always sign the permit and strictly follow both the associated guidelines and the usual precautions.

Drawn up by: xx	Checked by: xx	Approved by: xx
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