Appraisals and Consulting of C.T. P.M. Boards summary of accident events analyzed in detail

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 7500 ld (death)</i> Part of body injured: internal organs Type of injury: Death by asphyxiation	ev. sist. protective passive / active (in the case given the severity of the accident) – Rear suspension - PPE protection would not solve the problem	
1	CONTACT WITH OTHER MATERIAL OR SUBSTANCE – Drowning in a liquid – drowning in the lake inside the cab of the truck	The worker to the detection of a deviation of the functionality of truck called the technical expertise and not using the failure transport	7
2	BREAKAGE, BURSTING, SPLITTING, SLIPPING, FALL, COLLAPSE OF MATERIALAGENT-Break of material, at junctions, connections, material agentlinked to the sudden failure of the rear suspension.LOSS OF CONTROL (TOTAL OR PARTIAL) OF MACHINE, MEANS OFTRANSPORT OR HANDLING EQUIPMENT, HAND-HELD TOOL, OBJECT,ANIMAL - Problems of total or partial control of the means of transport /equipment material handling and / or substance (motorized or not) - relatedto the fact that it is generated a sudden imbalance of the truck, with primerpair of rollover and push towards the lake	Inclusion of a system for the maintenance of truck;	6

3	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Tipology - Machinery and transport equipment - related to to the truck used for processing EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Choice and condition of use – How to use - related to the actions performed by the worker at the time of sudden breakage of the suspension EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Choice and condition of use – Maintenance status - linked to the maintenance of the truck; AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Procedures for workers - related to the procedures to be adopted AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Information, formation and Training - linked to the IFT that must be made on the procedures enacted REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE - Operating conditions - Verification functionality before to use - linked to the checks to be carried on the truck after to its use	Evaluation of the choice of the solutions adopted	5
	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - related to transport, operating instructions, maintenance status;	MACHINERY, EQUIPMENT AND PROVISIONAL WORKS - transport used for processing	
4	AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - related to the workers procedures and the resulting IFT	AUDIT, SUPERVISION AND OPERATING PROCEDURES & IFT - information, training and operator training at various levels,	4
	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE - related to inspections of the means	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE - inspections of the means	

5.1	poor maintenance of the truck	A. Technological / plant solutions contrast deviations (emergencies) external or internal (from process deviations) and provided means intervention (linked to the fact that it needs a system that blocks in case of failure the lifting body of the truck);	3
5.2	no operators procedures for the transport maintenance (truck) no information, education and training operation not analyzed	 A. Procedures of verification, control and detection / reporting / management of elementary functional anomalies - regarding the maintenance of the truck and checks after to use B. Definition of the working phases and the contingent operations for the subjects (to the several levels) (related the definition of working procedures); C. Operating procedures in emergency situations internal or external (uncontrollable evolution process) - Signs of Emergency (call procedure), – concerning the establishment of procedures to be applied in case of emergency 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Definition of the technical maintenance of transport	1

Appraisals and Consulting of C.T. P.M.

ROOT CAUSES		INDIRECT CAUSES OF SECOND LEVEL
	External criticality	 General criticality [boundary conditions (eg. topography, climate, availability of services, sociological context)] Specific criticality (seismicity, area exposed to floods, avalanches,)
STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS	Structure	 General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,) Specific structural Aspects [eg. Structural safety equipment, escape routes (eg fire escape) and safe places] Consistency with the uses
CHARACTERISTICS	Common Plant	- General Plants [eg. distribution systems (production) of energy, management systems of the general environmental conditions (eg, heating, cooling, air exchange, lighting,), communication systems]
	Structure maintenance	2 Specific Pants (systems of emergency management, detection, contrast and alarm) - Conservation work
Equipment (Machines)	Typology	 Participation of adaptation to the norms Machine [tool, operator, auxiliary (eg, pollutant collection systems, cooling, heating,)] Work Equipment [instrumentation, equipment, localized systems of transport energy (eg. power cables,)] Machinery and transport equipment Devices (command and control, signaling, the system)
AND TEMPORARY WORKS	Choice and conditions of use	Security) Works provisional (eg. scaffolding,) Suitability to he development of specific operations in the context Installation How to use Maintenance status
AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT	Procedure	 Audit ; Supervision; Procedures for workers; Procedures for machine operators; Procedures for personnel systems; Procedures for supervisors; Procedures for special operations personnel; Information, formation and Training
REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE	Operating conditions	Test Test Verification functionality before to use Types of maintenance applied Revision Updating systems
PHYSICAL, CHEMICAL, BIOLOGICAL ASPECTS OF	Physical - chemical - biological critical of working environment	 Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,)
WORKPLACES	Localized solutions for the management of environmental conditions	 Environmental treatment (eg. thermal insulation, acoustic,) Lighting Massing available
PHYSIOLOGICAL AND	Ideological and subject aspects	 Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates
THE SUBJECTS INVOLVED	physiological Aspects	 <u>Contract / employment</u> Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity)
INTERFERENCE OF FUNCTIONAL VOLUMES Mecanical systems Mec. sist operator	Use of functional volumes	 Vehicles / machinery / plant / equipment in motion, controlled by operator Vehicles / machinery / plant / equipment, automated motion (controlled by PLC) Workers on the move

Operator - operator

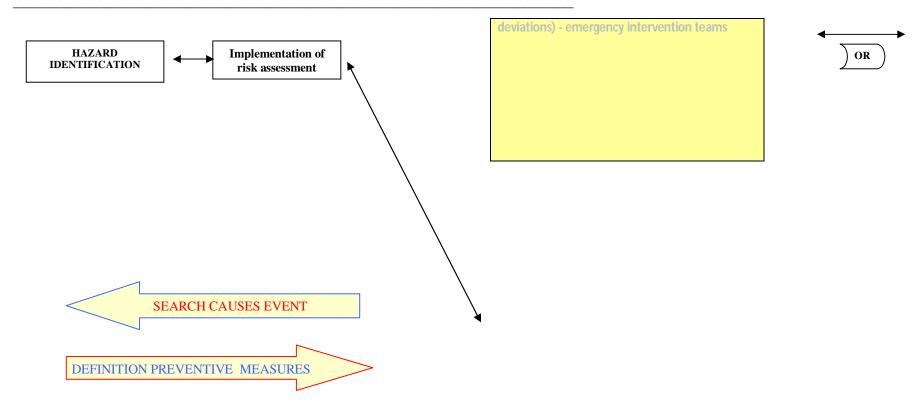
Structural, plant and technology solutions for the workplace management Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) Technological/Plant solutions for interference management: current operational situations Detection / signal / alarm deviations systems (emergencies) external or internal (from process deviations) Technological / plant solutions contrast deviations (emergencies) external or internal (from process deviations) and provided means intervention WORK PLANNING AND PROCEDURAL INTERVWENTIONS AND Definition of the working phases and the contingent operations for the subjects (to the several levels) **Procedures for checking presence** Procedures of the action of the preplaces to the several levels Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) Procedures of verification, control and detection -/ reporting / management of elementary functional anomalies Procedures for ordinary and extraordinary maintenance of sites / facilities / equipment including emergency management internal / external Procedures for the detection / warning / alarm

TECHNIQUE INTERVETIONS

emergencies external or internal (from process deviations)

Operating procedures in emergency situations internal or external (uncontrollable evolution process) - Signs of Emergency (call procedure),

Operating Procedures contrast of external (emergencies) or internal deviation (process



IN	IDIRECT CAUSES OF FIRST LEVEL
Deviation due to electrical problems, explosion, fire	 Electrical problem caused by a plant failure Electrical problem caused by static electricity Electrical problem caused by missing insulation Electrical problem caused by external radiation / lightning Explosion Fire Another case relating to electrical problems, explosion, fire
overflow, overturn, leak, flow, vaporisation, emission	 Solid state - overflowing, overturning Liquid state - leaking, oozing, flowing, splashing, spraying Gaseous state - vaporisation, aerosol formation, gas formation Pulverulent material - smoke generation, dust/particles in suspension/emission of Another case relating to overflow, overturn, leak, flow, vaporisation, emission
Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	 Break of material, at junctions, connections, material agent Break / release of personal protective equipment Break with explosion of splinters (wood, glass, metal, stone, plastic, etc.) agent material Another case involving rupture, fracture, rupture violent, sudden and loud agent material
Slipping, falling, loss of stability, collapse agent material	 Slip, fall, loss of stability, collapse of Material Agent placed above (which falls on the victim) Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim) Slip, fall, loss of stability, the collapse of a material agent - at the same level Another case relating to slipping, falling, loss of stability, collapse agent material
Loss of control (total or partial) of machine, means of transport or handling equipment, hand-held tool, object, animal	 Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material Problems of total or partial control of the means of transport / equipment material handling and / or substance (motorized or not)

OR

	 Problems of total or partial control of a means of transport / handling of people and / or animals Problems of total or partial control of hand tool (motorized or not) as well as the material machined by Problems of total or partial control of object (led, moved, etc.). Problems of total or partial control of animal Another cause of problems related to total or partial control of machinery, transportation / handling equipment, hand tools or objects, animals
Slipping - Stumbling and falling - Fall of persons	 Fall of person from the top through the opening Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level Loss of balance - with the fall of person - at the same level Slipping or tripping on machinery Another case involving slipping or tripping, loss of balance - with the fall of person
Body movement without any physical stress	 Walking on a sharp object Kneel, sit, lean against Being grabbed, dragged, or moved by something from their momentum Uncoordinated movements, gestures, inopportune, inappropriate Another cause relative movement of the body without physical exertion (which usually leads to an external injury)
Body movement under or with physical stress	 Lifting, carrying or standing Pushing, pulling, pulling Depositing, dropping Twisting, turning, turning Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physical exertion (which usually leads to an internal injury)
Shock, fright, violence, aggression, threat, presence	 Surprise, fear Violence, aggression, threat - including employees of the Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals Presence of the victim or a third party that creates in itself a danger to the victim / for himself and if any other Another case involving surprise, fright, violence, aggression, threat, presence

]	DIRECT CAUSE
	- Indirect contact with the electrical circui
	lightning (passive)
	- Direct contact with electricity, suffer a
Contact with electric current,	electric discharge in the body
temperature	- Contact with flame or object / warm or red
	hot
	- Contact with object or cold or frozen
	- Another case involving contact with electric
	current, temperature
	- Contact with hazardous substances for
	nasal, oral, inhalation
	- Contact with hazardous substances throug
	the skin or eyes
	- Contact with hazardous substances throug
Contact with other material or	the digestive system, swallowing or eating
substance	- Drowning in a liquid
	- Burial under a solid
	- Immersion in a gas, in a suspension of
	particles
	E.
	- Another case involving contact with materia
	or substance
	- Vertical motion, crash on / against (th
Consider a constituellar and the	result of a fall)
Crushing vertically and / or	- Horizontal motion, crash on / against
horizontally moving, fall on / against	- Another case involving crushing vertic
an immovable object / ground	and / or horizontal moving, fall on / again
	an immovable object / ground (victim
	motion)
	 Struck by object projected
	 Struck by falling object
	- Struck by object that oscillates
	- Struck by object in rotation, motion
Struck by moving object, collisions	displacement, including vehicles
	- Collision with a moving object, includin
	vehicles - a collision with a person (the
	victim is moving)
	 Another case involving a collision by moving
	object, collision with
	- Contact with a sharp Material Agent (knife
	blade)
	- Contact with a sharp Material Agent (nail
	sharp tool)
contact with sharp material agent,	- Contact agent with hard or abrasiv
pointed, hard, abrasive	- Contact agent with hard or abrast
	- Another case concerning materials
	contact with agent edgy, sharp, har
	abrasive
	- Nesting, trapping, crushing in / inside
	- Nesting, trapping, crushing under
	- Nesting, trapping, crushing between
	- Tearing, cutting of a member, a hand,
Nosting transing orushing	finger or more parts of the body
Nesting, trapping, crushing,	
crushing, pinching, etc	- Constrict of whole body or of one or mo
	parts of it
	- By pinching
	- Another case involving nesting, trappin
	crushing, crushing, pinching, etc
	- Physical effort at the expense of the
	musculoskeletal system
	- Physical exertion caused by radiation, nois
Physical or mental effort	light, pressure
	 Effort psychic, mental shock
	- Another case involving mental or physic
	effort
	- Bite
	- Puncture by insects or fish
Bite, calcium, etc., by animals or	 Shot, football, head, strangulation
humans	
	 Another case relating to bite, kick, etc., b animals or humans

AND

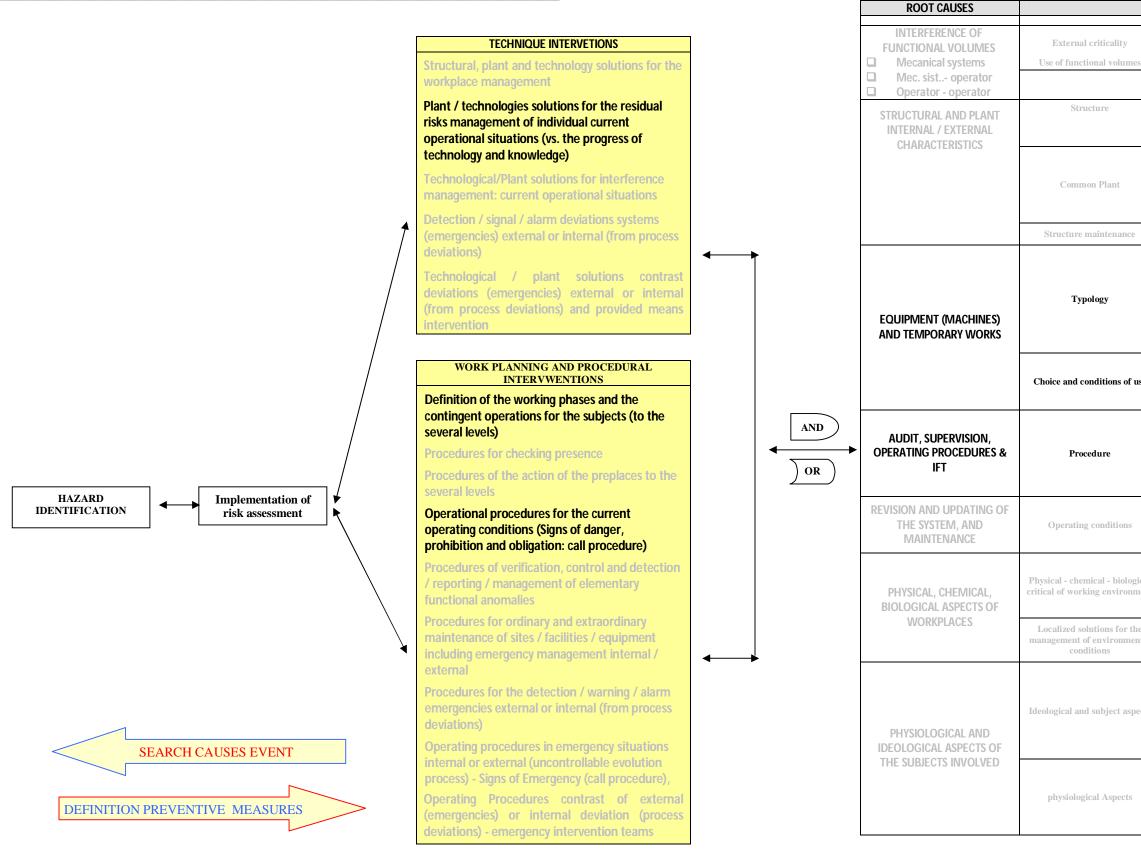
SEVERITY and TYPE OF INJURY (medical report data)

Death for crushing of whole body

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 7500 ld (death)</i> Part of body injured: total body and internal organs Type of injury: Death for multiple trauma fracture	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	CRUSHING VERTICALLY AND / OR HORIZONTALLY MOVING, FALL ON / AGAINST AN IMMOVABLE OBJECT / GROUND (VICTIM IN MOTION) - Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion) – related to the fall by 15 m in height	If the repair was not practicable to secure position and required to leave the decking had to be done using the proper equipment, such as a drum or similar self-lifting.	7
2	SLIPPING - STUMBLING AND FALLING - FALL OF PERSONS - Loss of balance - with the fall of man - from - related to the fall by 15 m in height outside the protection of the storage silos BODY MOVEMENT WITHOUT ANY PHYSICAL STRESS - Uncoordinated movements, gestures, inopportune, inappropriate - likely related to the sliding surface of the silo	identification of the correct method for performing maintenance tasks	6

3	 EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Tipology - Works provisional (eg. scaffolding,) - linked to the choice of the appropriate means for the execution of the processing EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Choice and condition of use – Suitability to he development of specific operations in the context linked to the choice of the appropriate means for the execution of the processing AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Procedures for workers - related to the procedures to be adopted AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Information, formation and Training - linked to the IFT that must be made on the procedures enacted AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Procedures enacted AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Information, formation and Training - linked to the IFT that must be made on the procedures enacted 	Evaluation of the choice of the solutions adopted	5
4	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - related to the choice of temporary equipment transport; AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - related to the workers procedures and the resulting IFT	 MACHINERY, EQUIPMENT AND PROVISIONAL WORKS - equipment used for processing AUDIT, SUPERVISION AND OPERATING PROCEDURES & IFT - information, training and operator training at various levels, 	4

5.1	equipment is not suitable for processing	A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) (linked to the choice of equipment);	3
5.2	no upgrade of information, education and training operation not analyzed wrong choice of equipment	 A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related to the methods for the selection of equipment B. Definition of the working phases and the contingent operations for the subjects (to the several levels) - (related the definition of working procedures); 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	definition of the methodology to be applied for the selection of equipment and methods of implementation of activities	1



		INDIRECT CAUSES OF SECOND LEVEL
	-	General criticality boundary conditions (eg.
	-	Vehicles / machinery / plant / equipment in
es	_	motion, controlled by operator Vehicles / machinery / plant / equipment,
		automated motion (controlled by PLC)
	-	Workers on the move
	-	Specific structural Aspects [eg. Structural
		safety equipment, escape routes (eg fire escape)
	3	and safe places] Consistency with the uses
	-	General Plants [eg. distribution systems
		(production) of energy, management systems of the general environmental conditions (eg,
		heating, cooling, air exchange, lighting,),
	4	communication systems] Specific Pants (systems of emergency
	-	Specific Pants (systems of emergency management, detection, contrast and alarm)
	-	Conservation work
	-	Participation of adaptation to the norms Machine [tool, operator, auxiliary (eg.
		pollutant collection systems, cooling, heating,
)] Work Equipment [instrumentation,
	-	Work Equipment [instrumentation, equipment, localized systems of transport
		energy (eg. power cables,)]
	2	Machinery and transport equipment Devices (command and control, signaling,
		security)
	-	Works provisional (eg. scaffolding,)
	-	Suitability to he development of specific operations in the context
use	-	Installation
	-	How to use Maintenance status
	_	Audit ;
	-	Supervision;
	-	Procedures for workers; Procedures for machine operators;
	-	Procedures for personnel systems;
	-	Procedures for supervisors; Procedures for special operations personnel;
	_	Information, formation and Training
	-	Test
	-	Verification functionality before to use Types of maintenance applied
	-	Revision
	-	Updating systems
	1	Raw materials and process products Products resulting from process deviations
gical	-	Chemical pollutants (solid, liquid, gaseous)
nent	-	Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,)
	-	Biological agents (eg, viruses, bacteria,)
10	-	Environmental treatment (eg. thermal inculation acoustic
ntal	-	insulation, acoustic,) Lighting
	-	Massing available
	-	Behaviour (available to any person to produce answers, determined from the environment,
		family regarding social situations, groups, and
ooto		objects) Registion in velocion to the duty guels and the
ects		Position in relation to the duty cycle and the number of shifts
	-	Relationships with supervisors and
	_	subordinates Contract / employment
	-	Age
	-	Work Experience Conditions of health
	1	Psycho-physical state (eg, depressed, sleepy,
		drunk, drugged,)
	-	Attitude (predisposition for a particular mental or physical activity)

IN	DIRECT CAUSES OF FIRST LEVEL
Deviation due to electrical problems, explosion, fire	 Electrical problem caused by a plant failure Electrical problem caused by static electricity Electrical problem caused by missing insulation Electrical problem caused by external radiation / lightning Explosion Fire
overflow, overturn, leak, flow, vaporisation, emission	 Another case relating to electrical problems, explosion, fire Solid state - overflowing, overturning Liquid state - leaking, oozing, flowing, splashing, spraying Gaseous state - vaporisation, aerosol formation, gas formation Pulverulent material - smoke generation, dust/particles in suspension/emission of Another case relating to overflow, overturn, leak, flow, vaporisation, emission
Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	 Break of material, at junctions, connections, material agent Break / release of personal protective equipment Break with explosion of splinters (wood, glass, metal, stone, plastic, etc.) agent material Another case involving rupture, fracture, rupture violent, sudden and loud agent material
Slipping, falling, loss of stability, collapse agent material	 Slip, fall, loss of stability, collapse of Material Agent placed above (which falls on the victim) Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim) Slip, fall, loss of stability, the collapse of a material agent - at the same level Another case relating to slipping, falling, loss of stability, collapse agent material
Loss of control (total or partial) of machine, means of transport or handling equipment, hand-held tool, object, animal	 Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material Problems of total or partial control of the means of transport / equipment material handling and / or substance (motorized or not) Problems of total or partial control of a means of transport / handling of people and / or animals Problems of total or partial control of hand tool (motorized or not) as well as the material machined by Problems of total or partial control of object (led, moved, moved, etc.). Problems of total or partial control of animal Another cause of problems related to total or partial control of machinery, transportation / handling equipment, hand tools or objects, animals
Slipping - Stumbling and falling - Fall of persons	 Fall of person from the top through the opening Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level Loss of balance - with the fall of person - at the same level Slipping or tripping on machinery Another case involving slipping or tripping, loss of balance - with the fall of person
Body movement without any physical stress	 Walking on a sharp object Kneel, sit, lean against Being grabbed, dragged, or moved by something from their momentum Uncoordinated movements, gestures, inopportune, inappropriate Another cause relative movement of the body without physical exertion (which usually leads to an external injury)
Body movement under or with physical stress	 Lifting, carrying or standing Pushing, pulling, pulling Depositing, dropping Twisting, turning, turning Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physical exertion (which usually leads to an internal injury)
Shock, fright, violence, aggression, threat, presence	 Surprise, fear Violence, aggression, threat - including employees of the Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals

	Presence of the victim or a third party that creates in itself a demonstrate the victim (for himself and if one other
	danger to the victim / for himself and if any other Another case involving surprise, fright, violence, aggression,
	threat, presence

	DIRECT CAUSE
	- Indirect contact with the electrical circuit
	lightning (passive)
	- Direct contact with electricity, suffer a
Contact with electric current,	electric discharge in the body
temperature	- Contact with flame or object / warm or red
	hot
	- Contact with object or cold or frozen
	- Another case involving contact with electri
	current, temperature
	- Contact with hazardous substances fo
	nasal, oral, inhalation
	- Contact with hazardous substances throug
	the skin or eyes
	- Contact with hazardous substances throug
Contact with other material or	the digestive system, swallowing or eating
	- Drowning in a liquid
	- Burial under a solid
	- Immersion in a gas, in a suspension of
	particles
	- Another case involving contact with materia
	or substance
	- Vertical motion, crash on / against (th
Cumphing worth U 1 /	result of a fall)
Crushing vertically and / or	- Horizontal motion, crash on / against
orizontally moving, fall on / against an immovable object / ground	- Another case involving crushing vertic
(victim in motion)	and / or horizontal moving, fall on / again
(victim in motion)	an immovable object / ground (victim
	motion)
	 Struck by object projected
	- Struck by falling object
	- Struck by object that oscillates
	- Struck by object in rotation, motio
Struck by moving object, collisions	displacement, including vehicles
	- Collision with a moving object, including
	vehicles - a collision with a person (th
	victim is moving)
	- Another case involving a collision by movin
	object, collision with
	- Contact with a sharp Material Agent (knife
	blade)
	- Contact with a sharp Material Agent (nail
contact with sharp material agent,	sharp tool)
pointed, hard, abrasive	- Contact agent with hard or abrasiv
pointed, nurd, ubrusive	material
	- Another case concerning materials
	contact with agent edgy, sharp, har
	abrasive
	 Nesting, trapping, crushing in / inside
	- Nesting, trapping, crushing under
	 Nesting, trapping, crushing under Nesting, trapping, crushing between
	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand,
Nesting, trapping, crushing,	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body
Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or mo
	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or mo parts of it
	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching
	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or mo parts of it By pinching Another case involving nesting, trappin
	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping crushing, crushing, pinching, etc
	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trappin crushing, crushing, pinching, etc Physical effort at the expense of the
	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or mo parts of it By pinching Another case involving nesting, trappin crushing, crushing, pinching, etc Physical effort at the expense of the musculoskeletal system
crushing, pinching, etc	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or mo parts of it By pinching Another case involving nesting, trappin crushing, crushing, pinching, etc Physical effort at the expense of th musculoskeletal system Physical exertion caused by radiation, nois
	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or mo parts of it By pinching Another case involving nesting, trappin crushing, crushing, pinching, etc Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, nois light, pressure
crushing, pinching, etc	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or mo parts of it By pinching Another case involving nesting, trappin crushing, crushing, pinching, etc Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, nois light, pressure Effort psychic, mental shock
crushing, pinching, etc	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trappin crushing, crushing, pinching, etc Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, nois light, pressure Effort psychic, mental shock Another case involving mental or physic
crushing, pinching, etc	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trappin crushing, crushing, pinching, etc Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, nois light, pressure Effort psychic, mental shock Another case involving mental or physic
crushing, pinching, etc	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trappin crushing, crushing, pinching, etc Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, nois light, pressure Effort psychic, mental shock Another case involving mental or physic effort Bite
crushing, pinching, etc	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trappin crushing, crushing, pinching, etc Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, nois light, pressure Effort psychic, mental shock Another case involving mental or physic effort Bite Puncture by insects or fish
crushing, pinching, etc Physical or mental effort	 Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trappin crushing, crushing, pinching, etc Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, nois light, pressure Effort psychic, mental shock Another case involving mental or physic effort Bite

AND OR

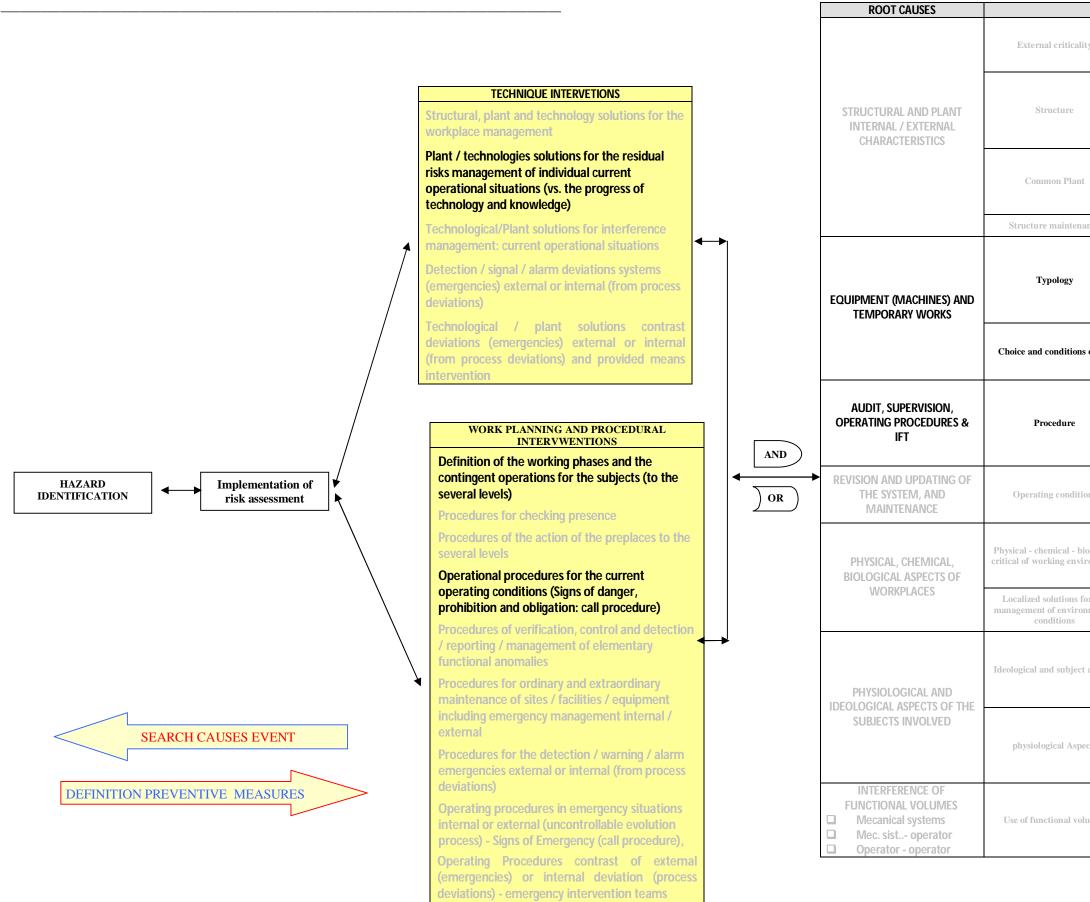
(medical report data) Death from multiple trauma fracture

SEVERITY and TYPE OF INJURY (medical report data)

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 7500 ld (death)</i> Part of body injured: totally of the body and internal organs Type of injury: Other types of concussion and internal injuries	ev. sist. protective passive / active (in the case given the severity of the accident – constriction by the movement of the rod / crank - PPE protection would not solve the problem	
1	STRUCK BY MOVING OBJECT, COLLISIONS WITH – Struck by object in rotation, motion, movement – movement of the impact bars and plates of crusher	At the time of deviation operator intervenes with the machine stopped	7
2	BREAKAGE, BURSTING, SPLITTING, SLIPPING, FALL, COLLAPSE OF MATERIAL AGENT - Breakage, bursting - causing splinters (wood, glass, metal, stone, plastic, others - chalks blocks LOSS OF CONTROL (TOTAL OR PARTIAL) OF MACHINE, MEANS OF TRANSPORT OR HANDLING EQUIPMENT, HAND-HELD TOOL, OBJECT, ANIMAL - Loss of control (total or partial) - of machine (including unwanted start-up) or of the material being worked by the machine – linked to the fact that crushing was blocked and then resumed SLIPPING - STUMBLING AND FALLING - FALL OF PERSONS - Fall of person - to a lower level – related to the fact that the person is precipitated in the mill bar following the unblocking BODY MOVEMENT UNDER OR WITH PHYSICAL STRESS (GENERALLY LEADING TO AN INTERNAL INJURY) - Pushing, pulling – linked to the fact that the injured pushing the chalk block with force	Installing the device to stop functioning equipment at the time of the door opening Operator training in case of anomaly in the operation of the mill bar	6
3	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Tipology - Work Equipment [instrumentation, equipment, localized systems of transport energy (eg. power cables,)] - related to the unblocking of the material in the feeding of the mill EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Tipology - Devices (command and control, signaling, security) - related to the unblocking of the material in the feeding of the mill and to the block of the machine at the time	Evaluation of the choice of the solutions adopted	5

	of the opening of the intervention window AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Procedures for workers, Procedures for machine operators, Procedures - related to the fact that he was not present any specific control problems procedure REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – operating condition – Verification functionality before to use – related to the fact that		
	the grind is interrupted and then resumed without permission		
	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – related to equipments and control devices of bar mill;	MACHINERY, EQUIPMENT AND PROVISIONAL WORKS – equipments used and control devices of machine used for the work	
4	AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – related to the absence of procedures for different levels of emercy situation	AUDIT, SUPERVISION AND OPERATING PROCEDURES & IFT - information, education and training of every level of worker; behavioural and operational procedure; supervision of the worker	4
	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – related to verify functionality before to use	REVISION, UPDATING AND MAINTENANCES – verification of functionality before to use and upgrade of procedure and formation	

5.1	Failure block of the mill to the opening of the intervention door - failure of safety equipment systems for any deviation Equipment not suitable for the task of unblocking the mill	 Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) – related to the adjustment of the control device of interruption operation of the mill when the interventions door opens and definition of the equipment to be used for the unblocking Detection / signal / alarm deviations systems (emergencies) external or internal (from process deviations) – related to the inclusion of the breaking device operating 	3
5.2	no specific procedures for operators at different levels on the activities to be carried out No information, education and training no supervision and procedures both operational and behavioral deficient	 A. Definition of the working phases and the contingent operations for the subjects (to the several levels) (establishment of procedures for the use and maintenance of the mill bar and supervisor control) B. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) (danger signalling of moving machine and illustration of an intervention procedure in the case of filling of the mill bar) 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Definition of the applicable updates to the situation and any subsequent actions	1



	INDIRECT CAUSES OF SECOND LEVEL
	 General criticality [boundary conditions (eg. topography, climate, availability of services,
lity	topography, climate, availability of services, sociological context)]
	- Specific criticality (seismicity, area exposed to floods, avalanches,)
	- General structural aspects (eg. general and local
	stability, allowable loads, materials, quality, efficiency,)
	- Specific structural Aspects [eg. Structural safety
	equipment, escape routes (eg fire escape) and safe
	places] 5 Consistency with the uses
	- General Plants [eg. distribution systems (production)
	of energy, management systems of the general environmental conditions (eg, heating, cooling, air
nt	exchange, lighting,), communication systems]
	6 Specific Pants (systems of emergency management, detection, contrast and alarm)
20200	- Conservation work
nance	- Participation of adaptation to the norms
	- Machine [tool, operator, auxiliary (eg. pollutant collection systems, cooling, heating,)]
	- Work Equipment [instrumentation, equipment,
	localized systems of transport energy (eg. power cables,)]
	- Machinery and transport equipment
	 Devices (command and control, signaling, security) Works provisional (eg. scaffolding,)
	- Suitability to he development of specific operations in
	the context - Installation
ns of use	- How to use
	- Maintenance status
	- Audit ; - Supervision:
	- Procedures for workers;
	 Procedures for machine operators; Procedures for personnel systems;
	 Procedures for supervisors;
	 Procedures for special operations personnel; Information, formation and Training
	- Test
	- Verification functionality before to use
tions	Types of maintenance applied Revision
	- Updating systems
	 Raw materials and process products Products resulting from process deviations
biological	- Chemical pollutants (solid, liquid, gaseous)
vironment	- Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,)
	 Biological agents (eg, viruses, bacteria,)
for the	- Environmental treatment (eg. thermal insulation,
onmental	acoustic,) - Lighting
	- Massing available
	Debendenne (and "Literation of the second se
	 Behaviour (available to any person to produce answers, determined from the environment, family
	answers, determined from the environment, family regarding social situations, groups, and objects)
ct aspects	answers, determined from the environment, family
ct aspects	 answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates
ct aspects	 answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment
ct aspects	answers, determined from the environment, family regarding social situations, groups, and objects) - Position in relation to the duty cycle and the number of shifts - Relationships with supervisors and subordinates - Contract / employment - Age - Work Experience
	answers, determined from the environment, family regarding social situations, groups, and objects) - Position in relation to the duty cycle and the number of shifts - Relationships with supervisors and subordinates - Contract / employment - Age - Work Experience - Conditions of health
ct aspects	 answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,)
	 answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or
	 answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,)
	 answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity) Vehicles / machinery / plant / equipment in motion,
	 answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity) Vehicles / machinery / plant / equipment in motion, controlled by operator
pects	 answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity) Vehicles / machinery / plant / equipment in motion, controlled by operator Vehicles / machinery / plant / equipment, automated motion (controlled by PLC)
pects	 answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity) Vehicles / machinery / plant / equipment in motion, controlled by operator Vehicles / machinery / plant / equipment, automated

OR

	DIRECT CAUSES OF FIRST LEVEL Electrical problem caused by a plant failure
	 Electrical problem caused by a plant failure Electrical problem caused by static electricity
Deviation due to electrical	 Electrical problem caused by state electricity Electrical problem caused by missing insulation
problems, explosion, fire	- Electrical problem caused by external radiation / lightning
	- Explosion
	- Fire
	- Another case relating to electrical problems, explosion, fire
	 Solid state - overflowing, overturning Liquid state - leaking, oozing, flowing, splashing, spraying
overflow, overturn, leak, flow,	 Gaseous state - vaporisation, aerosol formation, gas formation
vaporisation, emission	- Pulverulent material - smoke generation, dust/particles in
	suspension/emission of
	- Another case relating to overflow, overturn, leak, flow,
	vaporisation, emission
Breakage, bursting, splitting,	 Break of material, at junctions, connections, material agent Break / release of personal protective equipment
slipping, fall, collapse of Material	- Break with explosion of splinters (wood, glass, metal, stone,
Agent	plastic, etc.) agent material
	- Another case involving rupture, fracture, rupture violent,
	sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
	 above (which falls on the victim) Sliding, fall, loss of stability, collapse of agent material placed
Slipping, falling, loss of stability,	below (which drags the victim)
collapse agent material	- Slip, fall, loss of stability, the collapse of a material agent - at
	the same level
	- Another case relating to slipping, falling, loss of stability,
	 collapse agent material Problems of total or partial control of the machine (including
	- Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material
	 Problems of total or partial control of the means of transport /
	equipment material handling and / or substance (motorized or
	not)
Loss of control (total or partial) of	- Problems of total or partial control of a means of transport /
machine, means of transport or	handling of people and / or animals
handling equipment, hand-held	- Problems of total or partial control of hand tool (motorized or
tool, object, animal	not) as well as the material machined by
	 Problems of total or partial control of object (led, moved, moved, etc.).
	 Problems of total or partial control of animal
	- Another cause of problems related to total or partial control of
	machinery, transportation / handling equipment, hand tools or
	objects, animals
	- Fall of person from the top through the opening
	 Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level
Slipping - Stumbling and falling -	 Loss of balance - with the fall of man - from
Fall of persons	 Loss of balance - with the fall of person - at the same level
	- Slipping or tripping on machinery
	- Another case involving slipping or tripping, loss of balance -
	with the fall of person
	- Walking on a sharp object
	- Kneel, sit, lean against Baing graphed dragged or moved by something from their
Body movement without any	- Being grabbed, dragged, or moved by something from their momentum
physical stress	- Uncoordinated movements, gestures, inopportune,
	inappropriate
	- Another cause relative movement of the body without physical
	exertion (which usually leads to an external injury)
	- Lifting, carrying or standing
Dodumorrow from J. 10	 Pushing, pulling, pulling Depositing, dropping
	 Depositing, dropping Twisting, turning, turning
puysicai stress	 Step false twisting of the leg or ankle, slipping without falling
	- Another cause relative movement of the body during physical
	exertion (which usually leads to an internal injury)
	- Surprise, fear
	- Violence, aggression, threat - including employees of the
	- Violence, aggression, threat-from people external to the
Shock, fright, violence, aggression,	company to the victims in the context of their function (bank
threat, presence	 robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals
·	 Aggression, mods, violence by animals Presence of the victim or a third party that creates in itself a
	 Tresence of the victim of a tinfu party that creates in itself a danger to the victim / for himself and if any other
	- Another case involving surprise, fright, violence, aggression,

		DIRECT CAUSE
	Contact with electric current, temperature	 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot Contact with object or cold or frozen Another case involving contact with electric current, temperature
	Contact with other material or substance	 Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with material or substance
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (the result of a fall) Horizontal motion, crash on / against Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion)
AND	Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
	contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
	Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping, crushing experience of the provide statement of the provide stat
	Physical or mental effort	 crushing, crushing, pinching, etc Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
	Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans



SEVERITY and TYPE OF INJURY (medical report data)

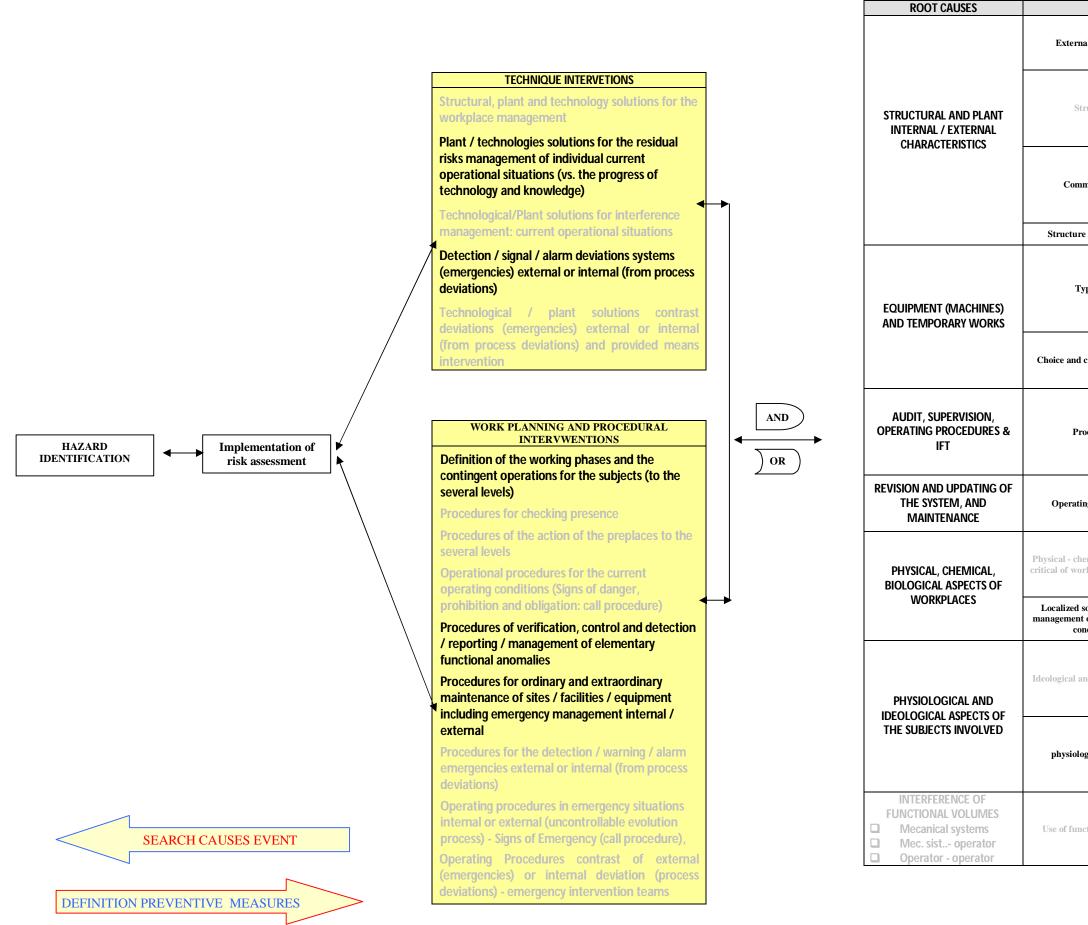
Death from multiple trauma fracture

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 7500 ld (death)</i> Part of body injured: trunk and internal organs Type of injury: mixed mechanical asphyxia	ev. sist. protective passive / active (in the case given the severity of the accident) - to constrict the movement of the rod / crank - PPE protection would not solve the problem	
1	NESTING, TRAPPING, CRUSHING, CRUSHING, PINCHING, ETC. – Constrict of whole body or of one or more parts of it – neck and chest crushing	The P.O. at the time of emergency is limited to support his colleague, and to carry out the order him to him	7
2	 BREAKAGE, BURSTING, SPLITTING, SLIPPING, FALL, COLLAPSE OF MATERIAL AGENT - Break of material, at junctions, connections, material agent - destruction of the bearing collar LOSS OF CONTROL (TOTAL OR PARTIAL) OF MACHINE, MEANS OF TRANSPORT OR HANDLING EQUIPMENT, HAND-HELD TOOL, OBJECT, ANIMAL - Problems of total or partial control of the means of transport / equipment material handling and / or substance (motorized or not) - crank mechanism that transmits the reciprocating motion to the system horizontal oscillating multi sprayer nozzle BODY MOVEMENT UNDER OR WITH PHYSICAL STRESS – Pushing, pulling - Share of P.O. to try to remedy the malfunction of the transmission of the reciprocating sietta 	Control action on the safety of the plant installation and maintenance Vigilance on the part of those in charge and information, training of PO recently inserted in the activity	6
3	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - External criticality - General criticality [boundary conditions (eg. topography, climate, availability of services, sociological context)]- related to the climatic conditions of the work environment in which it operated Part abuse STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – Common Plant - Specific Pants (systems of emergency management, detection, contrast and alarm) - related to the fact that the emergency stop button was not easily accessible and not blocked the progress of the whole machine, but only some parts of it;	Evaluation of the choice of the solutions adopted	5

	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – Structure maintenance – Conservation work - related to the fact that pieces have been recovered from the existing system, like the engine crank-connecting rod system, which had many flaws, and the gear that was in terms of improper maintenance STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – Structure maintenance – Participation of adaptation to the norms - related to the fact that the gear had been recovered without consideration of its seal that contained asbestos, and that the bearing crank was in poor condition EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Tipology - Devices (command and control, signaling, security) - related to the fact that the emergency stop button was not easily accessible and not blocked the progress of the whole machine, but only some parts of it EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Choice and condition of use – Maintenance status - related to the fact that the gearbox was in a state of improper service, and that the bearing crank was in poor condition PHYSICAL, CHEMICAL, BIOLOGICAL ASPECTS OF WORKPLACES - Localized solutions for the management of environmental conditions – lighting - related to visibility problems in the operational area of the continous line PHYSIOLOGICAL AND IDEOLOGICAL ASPECTS OF THE SUBJECTS INVOLVED - physiological Aspects – work experience - linked to the fact that the P.O. had been included recently in the activity with the task of "guiding the chief engineer" for the purpose of learning the conduct of the paper machine AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Procedures for workers, procedures for machine operators, Procedures for supervisors - related to the fact that it was not present no procedure for interventions in case of emergency on the continuous line REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – Operating conditions – Types of maintenance applied – related to lack of maintenance both in the workplace and the equipment		
4	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – related to general criticality, to the consistency with the uses and to actions to norms adaptation and specific systems for emergency management	EXTERNAL/INTERNAL STRUCTURAL AND PLANT CHARACTERISTICS – work environment MACHINERY, EQUIPMENT AND PROVISIONAL WORKS - equipment used	4

EQUIPMENT (MACHINES) AND TEMPORARY WORKS – related to the	for processing	
maintenance type and status of continous line and its equipments;	PHYSICAL, CHEMICAL AND BIOLOGICAL ASPECTS OF THE WORK	
PHYSICAL, CHEMICAL AND BIOLOGICAL ASPECTS OF THE	ENVIRONMENT – related to working conditions in the workplace	
WORK ENVIRONMENT - related to the lighting of the environment work	PHYSIOLOGICAL, SUBJECTIVE AND IDEOLOGICAL ASPECTS - Type of	
PHYSIOLOGICAL, SUBJECTIVE AND IDEOLOGICAL ASPECTS – related to the work experience of the injured;	employment contract, choice of workers, work experience	
AUDIT, SUPERVISION AND OPERATING PROCEDURES & IFT - related to the fact that it was not present no procedure	AUDIT, SUPERVISION AND OPERATING PROCEDURES & IFT - information, training and operator training at various levels, both operational and behavioral procedures, supervision of the worker by	
REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – related to maintenance	the Head	

5.1	poor maintenance of the workplace lack of maintenance of the equipment failure of safety equipment systems for maintenance activities	 A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) (related to all Root Causes identified); B. Detection / signal / alarm deviations systems (emergencies) external or internal (from process deviations) - (related to the difficulties of finding a PO and linked to the external and internal structural characteristics of the continuous line); 	3
5.2	no procedures for the operators at different levels on the activities to be carried out in case of emergency failure to provide information, education and training no supervision / operational and behavioural procedures deficient operation not provided and not analyzed	 A. Definition of operational procedures for emergency conditions (related to machinery, equipment and temporary works); B. Procedures for ordinary and extraordinary maintenance of sites / facilities / equipment including emergency management internal / external (related to machinery, equipment and temporary works); C. Procedures of verification, control and detection / reporting / management of elementary functional anomalies (related to the definition of working procedures and consequent information, education and training) 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Definition of the technical maintenance of equipment and the organization of society at various levels	1



	INDIRECT CAUSES OF SECOND LEVEL
	- General criticality [boundary conditions (eg.
	topography, climate, availability of services,
al criticality	sociological context)]
	- Specific criticality (seismicity, area exposed to floods, avalanches,)
	- General structural aspects (eg. general and local
	stability, allowable loads, materials, quality,
	efficiency,)
ructure	- Specific structural Aspects [eg. Structural safety equipment, escape routes (eg fire escape) and safe
	places]
	- Consistency with the uses
	- General Plants [eg. distribution systems
	(production) of energy, management systems of the
mon Plant	general environmental conditions (eg, heating, cooling, air exchange, lighting,), communication
	systems]
	- Specific Pants (systems of emergency management,
	detection, contrast and alarm)
e maintenance	 Conservation work Participation of adaptation to the norms
	- Participation of adaptation to the norms - Machine [tool, operator, auxiliary (eg. pollutant
	collection systems, cooling, heating,)]
	- Work Equipment [instrumentation, equipment,
ypology	localized systems of transport energy (eg. power cables,)]
	- Machinery and transport equipment
	- Devices (command and control, signaling, security)
	- Works provisional (eg. scaffolding,)
	 Suitability to he development of specific operations in the context
conditions of use	- Installation
	- How to use
	- Maintenance status
	- Audit ;
	 Supervision; Procedures for workers;
	 Procedures for machine operators;
ocedure	- Procedures for personnel systems;
	 Procedures for supervisors;
	 Procedures for special operations personnel; Information, formation and Training
	- Test
	- Verification functionality before to use
ing conditions	- Types of maintenance applied
	 Revision Updating systems
	Raw materials and process products
	 Products resulting from process deviations
emical - biological	- Chemical pollutants (solid, liquid, gaseous)
rking environment	- Physical pollutants (eg noise, vibration,
	 electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,)
solutions for the	 Environmental treatment (eg. thermal insulation,
solutions for the	acoustic,)
nditions	- Lighting Massing available
	 Massing available Behaviour (available to any person to produce
	answers, determined from the environment, family
	regarding social situations, groups, and objects)
ind subject aspects	 Position in relation to the duty cycle and the number of shifts
	 number of shifts Relationships with supervisors and subordinates
	 Contract / employment
	- Age
	- Work Experience
ogical Aspects	 Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk,
Secur repreto	drugged,)
	- Attitude (predisposition for a particular mental or
	physical activity)
	 Vehicles / machinery / plant / equipment in motion.
	controlled by operator
ctional volumes	
	motion (controlled by PLC) - Workers on the move
	WOLKES OF HERIC

	INDIRECT CAUSES OF FIRST LEVEL
Deviation due to electrical problems, explosion, fire	 Electrical problem caused by a plant failure Electrical problem caused by static electricity Electrical problem caused by missing insulation Electrical problem caused by external radiation / lightning Explosion Fire Another case relating to electrical problems, explosion, fire
overflow, overturn, leak, flow vaporisation, emission	 Solid state - overflowing, overturning Liquid state - leaking, oozing, flowing, splashing, spraying
Breakage, bursting, splitting, slipping, fall, collapse of Mater Agent	
Slipping, falling, loss of stabilit collapse agent material	 Slip, fall, loss of stability, collapse of Material Agent placed above (which falls on the victim) Sliding, fall, loss of stability, collapse of agent material placed
Loss of control (total or partial)	 Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material Problems of total or partial control of the means of transport equipment material handling and / or substance (motorized or not)
AND OR	r handling of people and / or animals
Slipping - Stumbling and falling Fall of persons	 Fall of person from the top through the opening Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level Loss of balance - with the fall of man - from Loss of balance - with the fall of person - at the same level Slipping or tripping on machinery Another case involving slipping or tripping, loss of balance - with the fall of person
Body movement without any physical stress	 Walking on a sharp object Kneel, sit, lean against Being grabbed, dragged, or moved by something from their
Body movement under or with physical stress	 Lifting, carrying or standing Pushing, pulling, Depositing, dropping Twisting, turning, turning Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physical exertion (which usually leads to an internal injury)
Shock, fright, violence, aggressi threat, presence	 Surprise, fear Violence, aggression, threat - including employees of the Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank)

L	DIRECT CAUSE
	- Indirect contact with the electrical circuit
	lightning (passive)
	- Direct contact with electricity, suffer an
Contact with electric current, temperature	electric discharge in the body
	- Contact with flame or object / warm or red
	hot
	 Contact with object or cold or frozen
	- Another case involving contact with electric
	current, temperature
	- Contact with hazardous substances for
	nasal, oral, inhalation
	- Contact with hazardous substances through
	the skin or eves
	- Contact with hazardous substances through
Contact with other material or	the digestive system, swallowing or eating
	- Drowning in a liquid
	- Burial under a solid
	- Immersion in a gas, in a suspension o
	particles
	 Another case involving contact with materia
	or substance
	- Vertical motion, crash on / against (the
Caushing vorticelly and / an	result of a fall)
Crushing vertically and / or	- Horizontal motion, crash on / against
horizontally moving, fall on / against	- Another case involving crushing vertica
an immovable object / ground	and / or horizontal moving, fall on / agains
	an immovable object / ground (victim in
	motion)
	- Struck by object projected
	- Struck by falling object
	- Struck by object that oscillates
	- Struck by object in rotation, motion
Struck by moving object, collisions	displacement, including vehicles
	- Collision with a moving object, including
	vehicles - a collision with a person (the
	victim is moving)
	- Another case involving a collision by moving
	object, collision with
	- Contact with a sharp Material Agent (knife
	blade)
	- Contact with a sharp Material Agent (nail
	sharp tool)
contact with sharp material agent,	- Contact agent with hard or abrasiv
pointed, hard, abrasive	material
	- Another case concerning materials in
	contact with agent edgy, sharp, hard
	abrasive
	- Nesting, trapping, crushing in / inside
	 Nesting, trapping, crushing under
	 Nesting, trapping, crushing between
	- Tearing, cutting of a member, a hand, a
Nesting, trapping, crushing,	finger or more parts of the body
crushing, pinching, etc	- Constrict of whole body or of one or more
o, r,	parts of it
	- By pinching
	 By placing Another case involving nesting, trapping
	crushing, crushing, pinching, etc
	- Physical effort at the expense of the
	musculoskeletal system
	- Physical exertion caused by radiation, noise
Physical or mental effort	light, pressure
	- Effort psychic, mental shock
	- Another case involving mental or physica
	effort
	- Bite
Bite, calcium, etc., by animals or	a director of the total
humans	- Shot, football, head, strangulation
	- Another case relating to bite, kick, etc., by
	animals or humans

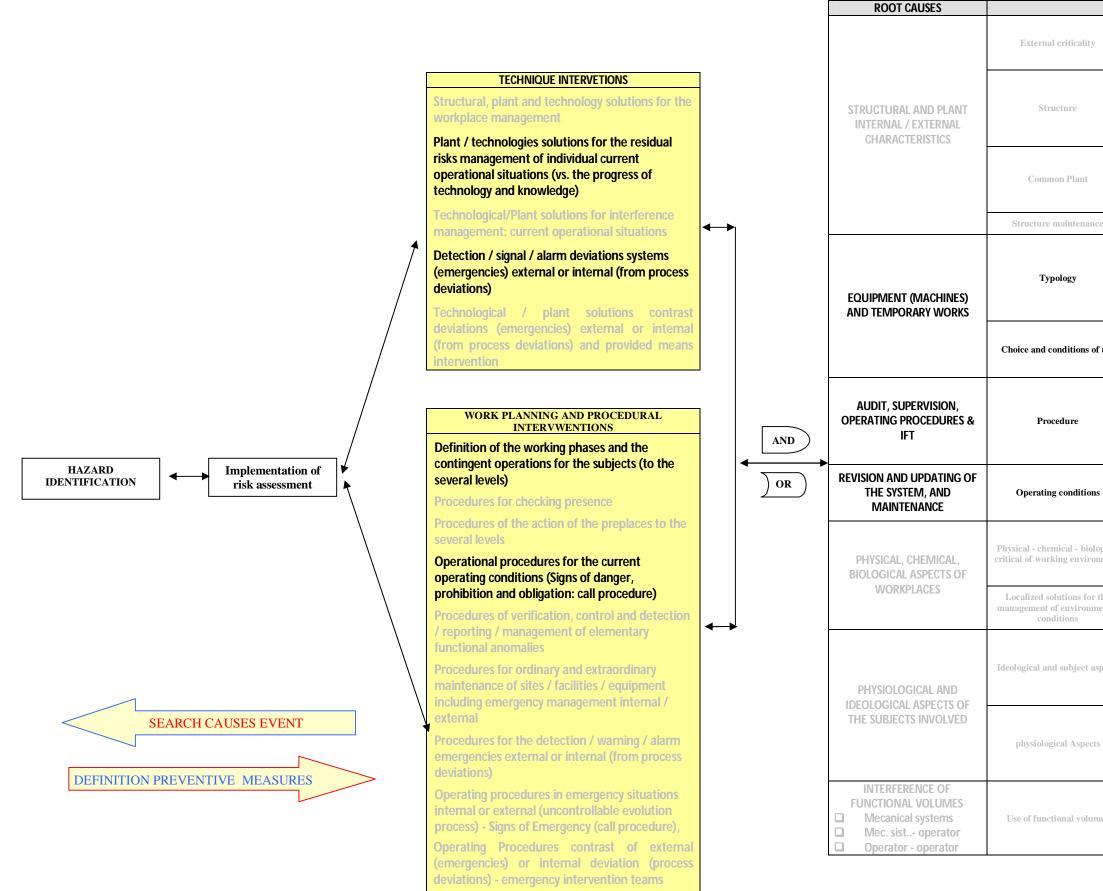


SEVERITY and TYPE OF INJURY (medical report data)

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 7500 ld (death)</i> Part of body injured: Lower Extremities Type of injury: Closed fractures	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	CONTACT WITH SHARP MATERIAL AGENT, POINTED, HARD, ABRASIVE - Contact with a sharp Material Agent (nail / sharp tool) – linked to the contact with the blade of the inkwell	If the repair was not practicable to secure position and required to leave the decking had to be done using the proper equipment, such as a drum or similar self-lifting.	7
2	LOSS OF CONTROL (TOTAL OR PARTIAL) OF MACHINE, MEANS OF TRANSPORT OR HANDLING EQUIPMENT, HAND-HELD TOOL, OBJECT, ANIMAL - Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material - related to goodwill sudden knife inkwell	identification of the correct method for performing maintenance tasks	6

3	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Tipology - Machine [tool, operator, auxiliary (eg. pollutant collection systems, cooling, heating,)] - linked to the type of machine on which the intervention is carried out EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Tipology - Devices (command and control, signaling, security) - likely related to the temporary failure of the control circuit EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Choice and condition of use – How to use - linked to the maintenance use of the machine on which the intervention is carried out AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Procedures for workers - related to the procedures to be adopted AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Information, formation and Training - linked to the IFT that must be made on the procedures enacted AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Procedures for supervisors - related to the procedures to be adopted	Evaluation of the choice of the solutions adopted	5
4	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - linked to the types of maintenance to be performed on the machine AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - related to the workers procedures and the resulting IFT	 MACHINERY, EQUIPMENT AND PROVISIONAL WORKS - equipment used for processing and them maintenance AUDIT, SUPERVISION AND OPERATING PROCEDURES & IFT - information, training and operator training at various levels, 	4

5.1	temporary failure of the control circuit of the machine	A. Detection / signal / alarm deviations systems (emergencies) external or internal (from process deviations) (linked to the maintenance of control circuit);	3
5.2	no upgrade of information, education and training operation not analyzed maintenance procedures	 A. Procedures for ordinary and extraordinary maintenance of sites / facilities / equipment including emergency management internal / external - related to the definition of the type of maintenance to applied B. Definition of the working phases and the contingent operations for the subjects (to the several levels) - (related the definition of working procedures); C. Procedures of verification, control and detection / reporting / management of elementary functional anomalies - related to failure to report a fault in the control system of the machine 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	introduction of a system which highlights the anomalies and identifying the maintenance type to be applied with the subsequent procedure	1



	INDIRECT CAUSES OF SECOND LEVEL
ity	 General criticality [boundary conditions (eg. topography, climate, availability of services, sociological context)] Specific criticality (seismicity, area exposed to floods, avalanches,)
	 General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,) Specific structural Aspects [eg. Structural safety equipment, escape routes (eg fire escape) and safe
	places] 7 Consistency with the uses
t	 General Plants [eg. distribution systems (production) of energy, management systems of the general environmental conditions (eg, heating, cooling, air exchange, lighting,), communication systems] Specific Pants (systems of emergency management,
0700	detection, contrast and alarm) Conservation work
ance	Participation of adaptation to the norms Machine [tool, operator, auxiliary (eg. pollutant
	 collection systems, cooling, heating,)] Work Equipment [instrumentation, equipment, localized systems of transport energy (eg. power cables,)] Machinery and transport equipment Devices (command and control, signaling, security)
s of use	 Works provisional (eg. scaffolding,) Suitability to be development of specific operations in the context Installation How to use Maintenance status
	 Audit ; Supervision; Procedures for workers; Procedures for machine operators; Procedures for personnel systems; Procedures for supervisors; Procedures for special operations personnel; Information, formation and Training
ons	Test Verification functionality before to use Types of maintenance applied Revision Updating systems
iological ironment	 Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,)
or the nmental	 Environmental treatment (eg. thermal insulation, acoustic,) Lighting Massing available
t aspects	 Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment
ects	 Age Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity)
lumes	 Vehicles / machinery / plant / equipment in motion, controlled by operator. Vehicles / muchinery / plant / equipment; automated motion (controlled by PLC) Workers on the move

AND) OR

IND	IRECT CAUSES OF FIRST LEVEL
problems, explosion, fire	 Electrical problem caused by a plant failure Electrical problem caused by static electricity Electrical problem caused by missing insulation Electrical problem caused by external radiation / lightning Explosion Fire
overflow, overturn, leak, flow, vaporisation, emission	 Another case relating to electrical problems, explosion, fire Solid state - overflowing, overturning Liquid state - leaking, oozing, flowing, splashing, spraying Gaseous state - vaporisation, aerosol formation, gas formation Pulverulent material - smoke generation, dust/particles in suspension/emission of Another case relating to overflow, overturn, leak, flow, vaporisation, emission
Breakage, bursting, splitting,	 Break of material, at junctions, connections, material agent Break / release of personal protective equipment Break with explosion of splinters (wood, glass, metal, stone, plastic, etc.) agent material Another case involving rupture, fracture, rupture violent, sudden and loud agent material
Slipping, falling, loss of stability,	 Slip, fall, loss of stability, collapse of Material Agent placed above (which falls on the victim) Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim) Slip, fall, loss of stability, the collapse of a material agent - at the same level Another case relating to slipping, falling, loss of stability, collapse agent material
Loss of control (total or partial) of machine, means of transport or handling equipment, hand-held tool, object, animal	 Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material Problems of total or partial control of the means of transport / equipment material handling and / or substance (motorized or not) Problems of total or partial control of a means of transport / handling of people and / or animals Problems of total or partial control of hand tool (motorized or not) as well as the material machined by Problems of total or partial control of object (led, moved, moved, etc.). Problems of total or partial control of animal Another cause of problems related to total or partial control of machinery, transportation / handling equipment, hand tools or objects, animals
Slipping - Stumbling and falling - Fall of persons	 Fall of person from the top through the opening Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level Loss of balance - with the fall of man - from Loss of balance - with the fall of person - at the same level Slipping or tripping on machinery Another case involving slipping or tripping, loss of balance - with the fall of person
Body movement without any physical stress	 Walking on a sharp object Kneel, sit, lean against Being grabbed, dragged, or moved by something from their momentum Uncoordinated movements, gestures, inopportune, inappropriate Another cause relative movement of the body without physical exertion (which usually leads to an external injury)
Body movement under or with physical stress	 Lifting, carrying or standing Pushing, pulling, pulling Depositing, dropping Twisting, turning, turning Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physical exertion (which usually leads to an internal injury)
Shock, fright, violence, aggression, threat, presence	 Surprise, fear Violence, aggression, threat - including employees of the Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals Presence of the victim or a third party that creates in itself a danger to the victim / for himself and if any other Another case involving surprise, fright, violence, aggression, threat, presence

	DIRECT CAUSE
	- Indirect contact with the electrical circuit,
	lightning (passive)
	- Direct contact with electricity, suffer an
Contact with electric current,	electric discharge in the body
temperature	- Contact with flame or object / warm or red-
	hot
	 Contact with object or cold or frozen
	- Another case involving contact with electric
	current, temperature
	- Contact with hazardous substances for
	nasal, oral, inhalation
	- Contact with hazardous substances through
	the skin or eyes
	- Contact with hazardous substances through
Contact with other material or	the digestive system, swallowing or eating
substance	- Drowning in a liquid
	- Burial under a solid
	- Immersion in a gas, in a suspension of
	particles
	 Another case involving contact with material
	or substance
	- Vertical motion, crash on / against (the
Crushing vertically and / or	result of a fall)
horizontally moving, fall on / against	- Horizontal motion, crash on / against
an immovable object / ground	- Another case involving crushing vertical
	and / or horizontal moving, fall on / against
	an immovable object / ground (victim in
	motion)
	- Struck by object projected
	- Struck by falling object
	- Struck by object that oscillates
	- Struck by object in rotation, motion.
Struck by moving object, collisions	displacement, including vehicles
with	- Collision with a moving object, including
	vehicles - a collision with a person (the
	victim is moving)
	- Another case involving a collision by moving
	object, collision with
	- Contact with a sharp Material Agent (knife
	blade)
	- Contact with a sharp Material Agent (nail
	sharp tool)
contact with sharp material agent,	- Contact agent with hard or abrasive
pointed, hard, abrasive	material
	- Another case concerning materials in
	contact with agent edgy, sharp, hard
	abrasive
	- Nesting, trapping, crushing in / inside
	- Nesting, trapping, crushing under
	- Nesting, trapping, crushing between
	- Tearing, cutting of a member, a hand, a
Nesting, trapping, crushing,	finger or more parts of the body
crushing, pinching, etc	- Constrict of whole body or of one or more
0/1 0/ ····	parts of it
	- By pinching
	- Another case involving nesting, trapping
	crushing, crushing, pinching, etc
	- Physical effort at the expense of the
	musculoskeletal system
	 Physical exertion caused by radiation, noise
Physical or mental effort	light, pressure
a my sacua va micintar chivi t	- Effort psychic, mental shock
	 Another case involving mental or physica
	effort
	- Bite
Bite, calcium, etc., by animals or	- Puncture by insects or fish
	 Shot, football, head, strangulation Another case relating to bite, kick, etc., by
	animals or humans

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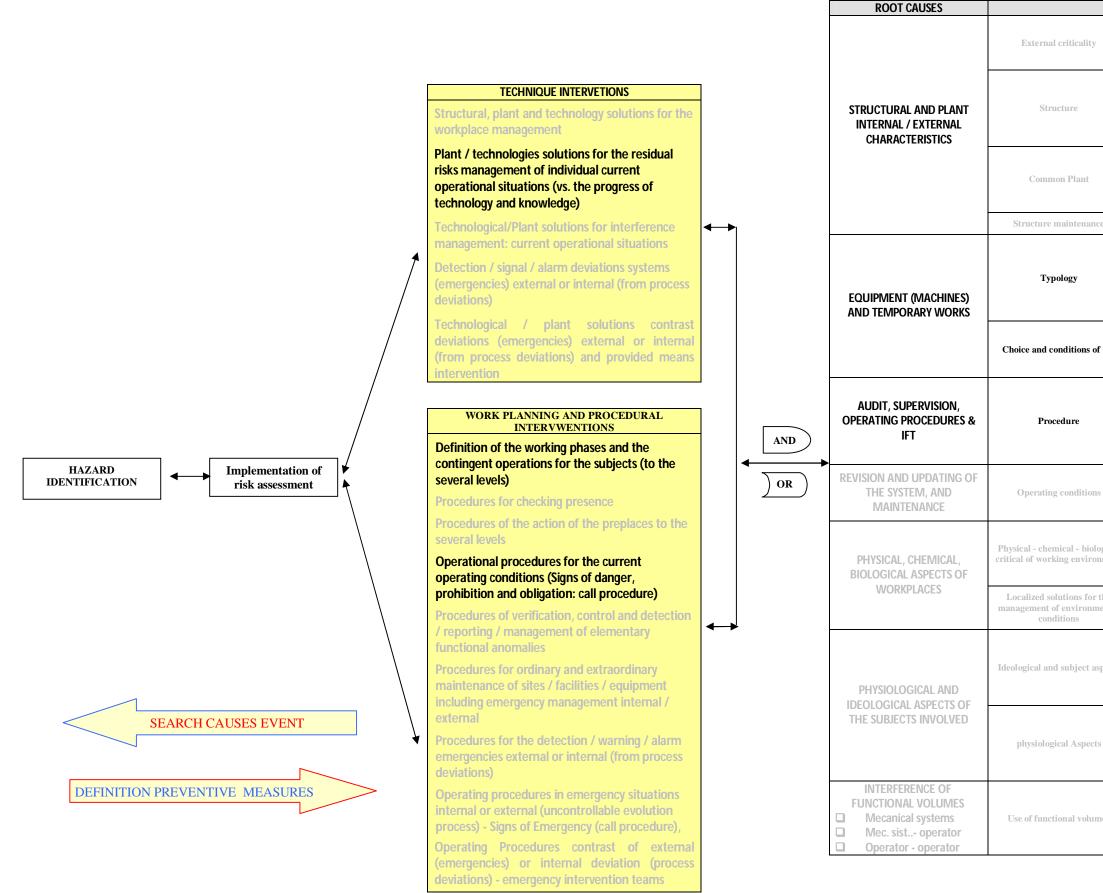
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SEVERITY and TYPE OF INJURY (medical report data)

Death for crushing of whole body

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 40 Id (death)</i> Part of body injured: Total body Type of injury:1 and 2 degree burns	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	CONTACT WITH ELECTRIC CURRENT, TEMPERATURE - Contact with flame or object / warm or red-hot – linked to the contact with hot drops of steel	If there was a procedure for the processing and an ideal equipment to use accident can't be verified	7
2	OVERFLOW, OVERTURN, LEAK, FLOW, VAPORISATION, EMISSION - Liquid state - leaking, oozing, flowing, splashing, spraying – related to hot drops of steel SLIPPING - STUMBLING AND FALLING - FALL OF PERSONS - Slipping or tripping - with the fall of man - from - related to the worker's fall in the pit under Siviera	identification of the correct method for the processing	6
3	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,) – related to the pit under the Siviera EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Tipology - Work Equipment [instrumentation, equipment, localized systems of transport energy (eg. power cables,)] - linked to the equipment used to complete its activity EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Choice and condition of use – How to use - linked to the use of the equipment on to take care for complete the activity AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Procedures for workers - related to the procedures to be adopted AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Information, formation and Training - linked to the IFT that must be made on the procedures enacted	Evaluation of the choice of the solutions adopted	5

4	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - linked to the pit under the Siviera EQUIPMENT (MACHINES) AND TEMPORARY WORKS - linked to the types of maintenance to be performed on the machine AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - related to the workers procedures and the resulting IFT	MACHINERY, EQUIPMENT AND PROVISIONAL WORKS - equipment used for processing AUDIT, SUPERVISION AND OPERATING PROCEDURES & IFT - information, training and operator training at various levels,	4
5.1	Protection device of the ladle from the heat	A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) (linked to the Protection device of the ladle from the heat);	3
5.2	no upgrade of information, education and training operation not correctly analyzed	 A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related to the definition of the current procedure B. Definition of the working phases and the contingent operations for the subjects (to the several levels) - (related the definition of working procedures); 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	introduction of a procedure for the current activity and worker's information, formation and training	1



	INDIRECT CAUSES OF SECOND LEVEL
ity	 General criticality [boundary conditions (eg. topography, climate, availability of services, sociological context)] Specific criticality (seismicity, area exposed to floods, avalanches,)
	- General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,)
	 Specific structural Aspects [eg. Structural safety equipment, escape routes (eg fire escape) and safe places] Consistency with the uses
t	 General Plants [eg. distribution systems (production) of energy, management systems of the general environmental conditions (eg, heating, cooling, air exchange, lighting,), communication systems] Specific Pants (systems of emergency management,
	detection, contrast and alarm) - Conservation work
ance	- Participation of adaptation to the norms
	 Machine [tool, operator, auxiliary (eg. pollutant collection systems, cooling, heating,)] Work Equipment [instrumentation, equipment, localized systems of transport energy (eg. power cables,)] Machinery and transport equipment Devices (command and control, signaling, security) Works provisional (eg. scaffolding,)
s of use	 Suitability to be development of specific operations in the context Installation How to use Maintenance status
	 Audit ; Supervision; Procedures for workers; Procedures for machine operators; Procedures for personnel systems; Procedures for supervisors; Procedures for special operations personnel; Information, formation and Training
ons	 Test Verification functionality before to use Types of maintenance applied Revision Updating systems
iological ironment	 Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,)
for the nmental	 Environmental treatment (eg. thermal insulation, acoustic,) Lighting Massing available
t aspects	 Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment
ects	 Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity)
lumes	 Vehicles / machinery / plant / equipment in mation, controlled by operator Vehicles / machinery / plant / equipment, automated matien (controlled by PLC) Workers on the move

IN	IDIRECT CAUSES OF FIRST LEVEL
Deviation due to electrical problems, explosion, fire	 Electrical problem caused by a plant failure Electrical problem caused by static electricity Electrical problem caused by missing insulation Electrical problem caused by external radiation / lightning Explosion Fire Another case relating to electrical problems, explosion, fire
overflow, overturn, leak, flow, vaporisation, emission	 Solid state - overflowing, overturning Liquid state - leaking, oozing, flowing, splashing, spraying Gaseous state - vaporisation, aerosol formation, gas formation Pulverulent material - smoke generation, dust/particles in suspension/emission of Another case relating to overflow, overturn, leak, flow, vaporisation, emission
Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	 Break of material, at junctions, connections, material agent Break / release of personal protective equipment Break with explosion of splinters (wood, glass, metal, stone, plastic, etc.) agent material Another case involving rupture, fracture, rupture violent, sudden and loud agent material
Slipping, falling, loss of stability, collapse agent material	 Slip, fall, loss of stability, collapse of Material Agent placed above (which falls on the victim) Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim) Slip, fall, loss of stability, the collapse of a material agent - at the same level Another case relating to slipping, falling, loss of stability, collapse agent material
Loss of control (total or partial) of machine, means of transport or handling equipment, hand-held tool, object, animal	 Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material Problems of total or partial control of the means of transport / equipment material handling and / or substance (motorized or not) Problems of total or partial control of a means of transport / handling of people and / or animals Problems of total or partial control of hand tool (motorized or not) as well as the material machined by Problems of total or partial control of object (led, moved, moved, etc.). Problems of total or partial control of animal Another cause of problems related to total or partial control of machinery, transportation / handling equipment, hand tools or objects, animals
Slipping - Stumbling and falling - Fall of persons	 Fall of person from the top through the opening Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level Loss of balance - with the fall of person - at the same level Slipping or tripping on machinery Another case involving slipping or tripping, loss of balance - with the fall of person
Body movement without any physical stress	 Walking on a sharp object Kneel, sit, lean against Being grabbed, dragged, or moved by something from their momentum Uncoordinated movements, gestures, inopportune, inappropriate Another cause relative movement of the body without physical exertion (which usually leads to an external injury)
Body movement under or with physical stress	 Lifting, carrying or standing Pushing, pulling, pulling Depositing, dropping Twisting, turning, turning Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physical exertion (which usually leads to an internal injury)
Shock, fright, violence, aggression, threat, presence	 Surprise, fear Violence, aggression, threat - including employees of the Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals Presence of the victim or a third party that creates in itself a danger to the victim / for himself and if any other Another case involving surprise, fright, violence, aggression, threat, presence

	DIRECT CAUSE
	- Indirect contact with the electrical circu
	lightning (passive)
Contact with clostric current	- Direct contact with electricity, suffer a electric discharge in the body
Contact with electric current, temperature	- Contact with flame or object / warm or re
	 hot Contact with object or cold or frozen
	 Another case involving contact with electric
	current, temperature
	- Contact with hazardous substances f
	nasal, oral, inhalation
	- Contact with hazardous substances throug
	the skin or eyes
	- Contact with hazardous substances through
Contact with other material or	the digestive system, swallowing or eating
substance	- Drowning in a liquid
	- Burial under a solid
	- Immersion in a gas, in a suspension
	particles
	- Another case involving contact with materi
	or substance
	 Vertical motion, crash on / against (the result of a fall)
Crushing vertically and / or	- Horizontal motion crash on / against
horizontally moving, fall on / against	- Another case involving crushing vertic
an immovable object / ground	and / or horizontal moving, fall on / again
	an immovable object / ground (victim
	motion)
	- Struck by object projected
	- Struck by falling object
	- Struck by object that oscillates
	- Struck by object in rotation, motion
Struck by moving object, collisions	displacement, including vehicles
	- Collision with a moving object, including
	vehicles - a collision with a person (t
	victim is moving)
	- Another case involving a collision by movin
	object, collision with
	- Contact with a sharp Material Agent (knife
	- Contact with a sharp Material Agent (nai
	- Contact with a sharp Material Agent (nai sharp tool)
contact with sharp material agent,	- Contact agent with hard or abrasi
pointed, hard, abrasive	material
	- Another case concerning materials
	contact with agent edgy, sharp, har
	abrasive
	- Nesting, trapping, crushing in / inside
	- Nesting, trapping, crushing under
	- Nesting, trapping, crushing between
	- Tearing, cutting of a member, a hand,
Nesting, trapping, crushing,	finger or more parts of the body
crushing, pinching, etc	- Constrict of whole body or of one or mo
	parts of it
	- By pinching
	- Another case involving nesting, trapping
	crushing, crushing, pinching, etc
	- Physical effort at the expense of the musculosheletal austam
	musculoskeletal system
Physical or mental effort	 Physical exertion caused by radiation, nois light, pressure
r nysicai or mental effort	- Effort psychic, mental shock
	 Another case involving mental or physic
	- Another case involving mental or physic effort
	- Bite
	- Puncture by insects or fish
Bite, calcium, etc., by animals or	 Shot, football, head, strangulation
	- Another case relating to bite, kick, etc., 1
	interview case istuning to birdy meny often i

AND) OR

SEVERITY and TYPE OF INJURY (medical report data)

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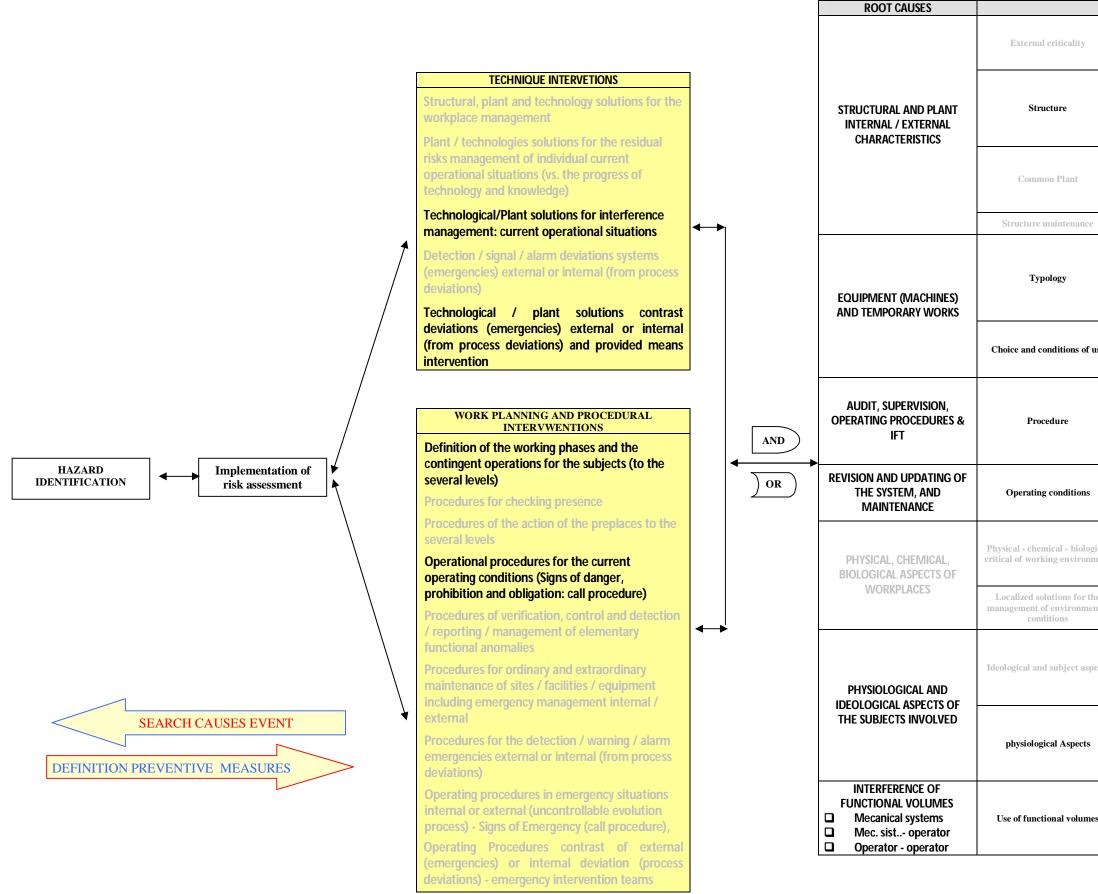
1 and 2 degree burns at total body

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 7500 ld (death)</i> Part of body injured: Total body and internal organs Type of injury: Death for burns and lesions	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	CONTACT WITH ELECTRIC CURRENT, TEMPERATURE - Contact with flame or object / warm or red-hot – <i>linked to the contact with hot droplets of melted</i> <i>metal</i>	If worker wasn't in the storage area of the ladle and the worker that moves the ladle was correctly former and train the accident can't be verified	7
2	OVERFLOW, OVERTURN, LEAK, FLOW, VAPORISATION, EMISSION - Liquid state - leaking, oozing, flowing, splashing, spraying – related to hot drops of steel by the ladle BREAKAGE, BURSTING, SPLITTING, SLIPPING, FALL, COLLAPSE OF MATERIAL AGENT . Break with explosion of splinters (wood, glass, metal, stone, plastic, etc.) agent material -related to the reaction with generation of airborne droplets, that are thee cause of the contact between ground and hot steel LOSS OF CONTROL (TOTAL OR PARTIAL) OF MACHINE, MEANS OF TRANSPORT OR HANDLING EQUIPMENT, HAND-HELD TOOL, OBJECT, ANIMAL - Problems of total or partial control of the means of transport / equipment material handling and / or substance (motorized or not) - related to the control movement of the ladle	Upgrade of information, formation and training of modify of control system of movement and distinction of identification of the storage area of the ladle and the run of the pedestrian	6

3	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,) – related to the structure of the ground in the ladle area EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Tipology - Machine [tool, operator, auxiliary (eg. pollutant collection systems, cooling, heating,)] - linked to the ladle used EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Choice and condition of use – How to use - linked to the uncorrect use of the ladle caused by the change of control system AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Procedures for workers , and supervisors- related to the procedures to be adopted AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Information, formation and Training - linked to the IFT that must be made on the procedures enacted REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – Operating conditions - Update systems – related to the changeling of the control system of the ladle PHYSIOLOGICAL AND IDEOLOGICAL ASPECTS OF THE SUBJECTS INVOLVED -	Evaluation of the choice of the solutions adopted	5

	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - linked to the storage area of the ladle	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS related to the storage area of the ladle	
	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - linked to the ladle used to performing the activity	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – control system of the movement ladle	
4	AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - related to the workers procedures and the resulting IFT	AUDIT, SUPERVISION AND OPERATING PROCEDURES & IFT - information, training and operator training at various levels,	4
	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – related to the upgrade of the control system of the ladle	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE - control system of the movement ladle	
	PHYSIOLOGICAL AND IDEOLOGICAL ASPECTS OF THE SUBJECTS INVOLVED – related to the worker used for the processing	PHYSIOLOGICAL AND IDEOLOGICAL ASPECTS OF THE SUBJECTS INVOLVED – worker correctly former and trained	

5.1	Storage Area not suitable for the ladle Control system not suitable for this type of ladle	 A. Technological / plant solutions contrast deviations (emergencies) external or internal (from process deviations) and provided means intervention (linked to the Protection device of the movement system of the ladle); B. Technological/Plant solutions for interference management: current operational situations - related to the delimitation of the storage area of the ladle 	3
5.2	no upgrade of information, education and training operation not correctly analyzed Interference of volume functional	 A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related to the definition of the procedure of movement of the ladle and of worker's move B. Definition of the working phases and the contingent operations for the subjects (to the several levels) - (related the definition of working procedures); 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	introduction of a correct modify to the control system and of procedures for the movement of ladle and consequently worker's information, formation and training	1



	INDIRECT CAUSES OF SECOND LEVEL
	- General criticality [boundary conditions (eg.
ty	topography, climate, availability of services, sociological context)]
- 0	- Specific criticality (seismicity, area exposed to floods,
	- General structural aspects (eg. general and local
	stability, allowable loads, materials, quality, efficiency,
)
	- Specific structural Aspects [eg. Structural safety equipment, escape routes (eg fire escape) and safe
	places]
	11 Consistency with the uses - General Plants [eg. distribution systems (production)]
	of energy, management systems of the general
	environmental conditions (eg, heating, cooling, air exchange, lighting,), communication systems]
	12 Specific Pants (systems of emergency management,
	detection, contrast and alarm)
ince	 Conservation work Participation of adaptation to the norms
	- Machine [tool, operator, auxiliary (eg. pollutant
	- Work Equipment [instrumentation, equipment,
	localized systems of transport energy (eg. power cables,
	- Machinery and transport equipment
	- Devices (command and control, signaling, security)
	Works provisional (eg. scaffolding,) Suitability to he development of specific operations in
	the context
of use	- Installation
	How to use Maintenance status
	- Audit ;
	 Supervision; Procedures for workers;
	 Procedures for workers, Procedures for machine operators;
	- Procedures for personnel systems;
	 Procedures for supervisors; Procedures for special operations personnel;
	- Information, formation and Training
	 Test Verification functionality before to use
ons	- Types of maintenance applied
	- Revision - Updating systems
	- Raw materials and process products
ological	 Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous)
ronment	- Physical pollutants (eg noise, vibration,
	 electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,)
or the	- Environmental treatment (eg. thermal insulation,
nmental	acoustic,) - Lighting
	- Massing available
	- Behaviour (available to any person to produce answers, determined from the environment, family
	regarding social situations, groups, and objects)
aspects	 Position in relation to the duty cycle and the number of shifts
	- Relationships with supervisors and subordinates
	- Contract / employment - Age
	- Work Experience
ete	 Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk,
cts	- rsycho-physical state (eg, depressed, sleepy, drunk, drugged,)
	- Attitude (predisposition for a particular mental or physical activity)
	physical activity)
	 Vehicles / machinery / plant / equipment in motion, - controlled by appendix
umes	controlled by operator - Vehicles / machinery / plant / equipment, automated -
	motion (controlled by PLC)
	- Workers on the move

	IN	DIRECT CAUSES OF FIRST LEVEL
	Deviation due to electrical problems, explosion, fire	 Electrical problem caused by a plant failure Electrical problem caused by static electricity Electrical problem caused by missing insulation Electrical problem caused by external radiation / lightning Explosion Fire Another case relating to electrical problems, explosion, fire
	overflow, overturn, leak, flow, vaporisation, emission	 Solid state - overflowing, overturning Liquid state - leaking, oozing, flowing, splashing, spraying Gaseous state - vaporisation, aerosol formation, gas formation Pulverulent material - smoke generation, dust/particles in suspension/emission of Another case relating to overflow, overturn, leak, flow
	Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	vaporisation, emission - Break of material, at junctions, connections, material agent - Break / release of personal protective equipment - Break with explosion of splinters (wood, glass, metal, stone plastic, etc.) agent material - Another case involving rupture, fracture, rupture violent
	Slipping, falling, loss of stability, collapse agent material	 sudden and loud agent material Slip, fall, loss of stability, collapse of Material Agent placed above (which falls on the victim) Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim) Slip, fall, loss of stability, the collapse of a material agent - a the same level Another case relating to slipping, falling, loss of stability collapse agent material
		 Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material Problems of total or partial control of the means of transport equipment material handling and / or substance (motorized o not)
AND OR	Loss of control (total or partial) of machine, means of transport or handling equipment, hand-held tool, object, animal	 Problems of total or partial control of a means of transport handling of people and / or animals Problems of total or partial control of hand tool (motorized o not) as well as the material machined by Problems of total or partial control of object (led, moved moved, etc.). Problems of total or partial control of animal Another cause of problems related to total or partial control o machinery, transportation / handling equipment, hand tools o
	Slipping - Stumbling and falling - Fall of persons	objects, animals - Fall of person from the top through the opening - Slipping or tripping - with the fall of man - from - Slipping or tripping - with the fall of person - at the same level - Loss of balance - with the fall of man - from - Loss of balance - with the fall of person - at the same level - Slipping or tripping on machinery - Another case involving slipping or tripping, loss of balance
	Body movement without any physical stress	with the fall of person - Walking on a sharp object - Kneel, sit, lean against - Being grabbed, dragged, or moved by something from thei momentum - Uncoordinated movements, gestures, inopportune inappropriate - Another cause relative movement of the body without physica
	Body movement under or with physical stress	 exertion (which usually leads to an external injury) Lifting, carrying or standing Pushing, pulling, pulling Depositing, dropping Twisting, turning, turning Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physica exertion (which usually leads to an internal injury)
	Shock, fright, violence, aggression, threat, presence	 Surprise, fear Violence, aggression, threat - including employees of the Violence, aggression, threat-from people external to th company to the victims in the context of their function (banl robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals Presence of the victim or a third party that creates in itself danger to the victim / for himself and if any other Another case involving surprise, fright, violence, aggression

	DIRECT CAUSE
	- Indirect contact with the electrical circuit
	lightning (passive)
~	- Direct contact with electricity, suffer an
Contact with electric current,	electric discharge in the body
temperature	- Contact with flame or object / warm or red
	hot
	- Contact with object or cold or frozen
	- Another case involving contact with electric
	current, temperature
	- Contact with hazardous substances for
	nasal, oral, inhalation
	- Contact with hazardous substances through
	 the skin or eyes Contact with hazardous substances through
Contact with other material or	 Contact with hazardous substances through the digestive system, swallowing or eating
substance	- Drowning in a liquid
	- Burial under a solid
	- Immersion in a gas, in a suspension of
	particles
	 Another case involving contact with materia
	- Vertical motion, crash on / against (th
	 Vertical motion, crash on / against (th result of a fall)
Crushing vertically and / or	- Horizontal motion, crash on / against
horizontally moving, fall on / against	 Horizontal motion, crash on / against Another case involving crushing vertical
an immovable object / ground	and / or horizontal moving, fall on / agains
	an immovable object / ground (victim i
	motion)
	Struck by object projected
	 Struck by falling object Struck by object that oscillates
	- Struck by object that oscillates
Struck by moving object, collisions	- Struck by object in rotation, motion displacement, including vehicles
with	
	- Collision with a moving object, including
	vehicles - a collision with a person (th victim is moving)
	 Another case involving a collision by moving
	- Another case involving a consist by moving object, collision with
	- Contact with a sharp Material Agent (knife
	- Contact with a sharp Waterial Agent (Kine blade)
	- Contact with a sharp Material Agent (nail
	sharp tool)
contact with sharp material agent,	- Contact agent with hard or abrasiv
pointed, hard, abrasive	material
	- Another case concerning materials in
	- Another case concerning inaterials in contact with agent edgy, sharp, hard
	abrasive
	 Nesting, trapping, crushing in / inside
	 Nesting, trapping, crushing in 7 listue Nesting, trapping, crushing under
	 Nesting, trapping, crushing under Nesting, trapping, crushing between
	- Tearing, cutting of a member, a hand,
Nesting, trapping, crushing,	- rearing, cutting of a member, a nand, finger or more parts of the body
crushing, pinching, etc	- Constrict of whole body or of one or mor
trusming, printilling, tu	- Constrict of whole body of of one of mor
	- By pinching
	- Another case involving nesting, trapping
	- Another case involving nesting, trapping crushing, crushing, pinching, etc
	- Physical effort at the expense of th
	- Flysical effort at the expense of the musculoskeletal system
	 Physical exertion caused by radiation, noise light, pressure
Physical or mental effort	
	· · · ·
	effort
	- Bite
Bite, calcium, etc., by animals or	- Puncture by insects or fish Shot football hood strongylation
humans	 Shot, football, head, strangulation Another case relating to bite, kick, etc., by
	- Another case relating to bite, kick, etc., by animals or humans

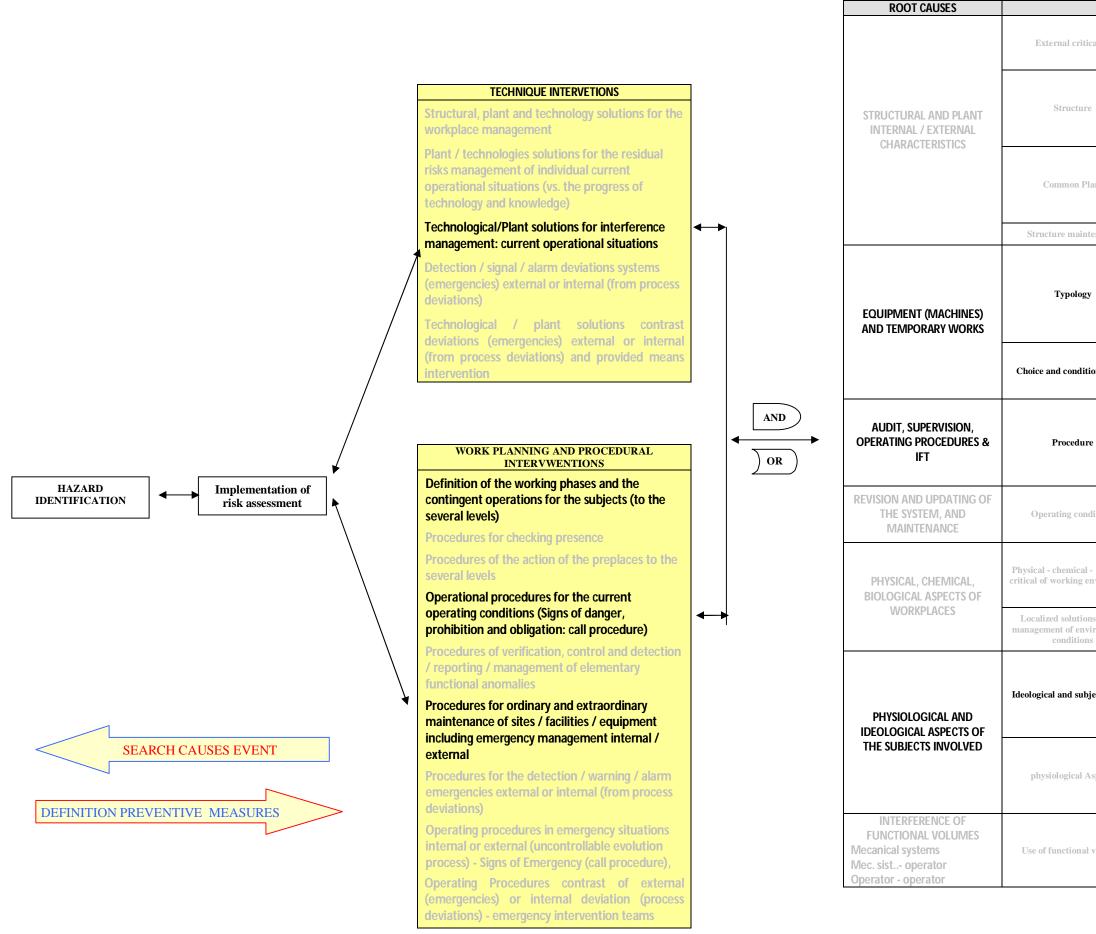
SEVERITY and TYPE OF INJURY (medical report data)

Death for burns at total body and internal lesions

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 7500 Id (death)</i> Part of body injured: Torso, multiple sites affected Type of injury: Death for internal and superficial injuries	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	STRUCK BY MOVING OBJECT, COLLISIONS WITH - Struck by object in rotation, motion, displacement, including vehicles – <i>linked to the contact</i> <i>with some components of machine in movement</i>	If worker respects safety devices the accident can't be verified	7
2	SLIPPING - STUMBLING AND FALLING - FALL OF PERSONS - Slipping or tripping - with the fall of person - at the same level - related to contact between the protective clothes with components of machine in movement BODY MOVEMENT WITHOUT ANY PHYSICAL STRESS - Being grabbed, dragged, or moved by something from their momentum -related to the entanglement on the components of the machine in rotation	It must avoid the manumission of safety device with a correct upgrade of information, formation and training and supervision of the worker activity	6

3	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Tipology – Devices (command and control, signalling, security) - linked to the safety devices manomissed EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Choice and condition of use – How to use - linked to the action of manumission of the safety devices did by worker AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Procedures for workers , and supervisors- related to the procedures to be adopted AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Information, formation and Training - linked to the IFT that must be made on the procedures enacted PHYSIOLOGICAL AND IDEOLOGICAL ASPECTS OF THE SUBJECTS INVOLVED - Ideological and subject aspects - Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) – related to the experience of the worker that manomits safety device to do maintenance	Evaluation of the choice of the solutions adopted	5
	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - linked to the safett device manomitted	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – a safety device that it can't tamper with	
4	AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - related to the workers procedures and the resulting IFT	AUDIT, SUPERVISION AND OPERATING PROCEDURES & IFT - information, training and operator training at various levels,	4
	PHYSIOLOGICAL AND IDEOLOGICAL ASPECTS OF THE SUBJECTS INVOLVED – related to the worker experience	PHYSIOLOGICAL AND IDEOLOGICAL ASPECTS OF THE SUBJECTS INVOLVED – worker correctly former and trained	

5.1	Safety device that it can tamper	A. Technological/Plant solutions for interference management: current operational situations - related to the delimitation of the storage area of the ladle	3
5.2	no upgrade of information, education and training Interference of volume functional No procedure of supervision	 A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related to the definition of the procedure of maintenance in safety B. Definition of the working phases and the contingent operations for the subjects (to the several levels) - (related the definition of working procedures); C. Procedures for ordinary and extraordinary maintenance of sites / facilities / equipment including emergency management internal / external - procedure of maintenance 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	introduction of a can't tamper safety devices and consequently worker's information, formation and training	1



- Specific criticality (seismicity, and floods, avalanches,) - General structural aspects (eg. ger stability, allowable loads, mate efficiency,) - Specific structural aspects (eg. ger stability, allowable loads, mate efficiency,) - Specific structural Aspects (eg. Strequipment, escape routes (eg fire safe places] - Consistency with the uses - General Plants (eg, distribu (production) of energy, managem the general environmental co heating, cooling, air exchange communication systems] - Specific Pants (systems of management, detection, contrast at collection systems, cooling, heating, 'collection systems, cooling, heating, 'work Equipment [instrumentation localized systems of transport ener cables,)] - Machinery and transport equipment - Machinery and transport equipment	of services, ea exposed to neral and local rials, quality, ructural safety e escape) and tion systems ent systems of nditions (eg, , lighting,), emergency
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- Specific criticality (seismicity, and floods, avalanches,) - General structural aspects (eg. ger stability, allowable loads, mate efficiency,) - Specific structural aspects (eg. ger stability, allowable loads, mate efficiency,) - Specific structural Aspects (eg. Strequipment, escape routes (eg fire safe places] - Consistency with the uses - General Plants (eg, distribu (production) of energy, managem the general environmental co heating, cooling, air exchange communication systems] - Specific Pants (systems of management, detection, contrast at collection systems, cooling, heating, 'collection systems, cooling, heating, 'work Equipment [instrumentation localized systems of transport ener cables,)] - Machinery and transport equipment - Machinery and transport equipment	neral and local rials, quality, ructural safety e escape) and ntion systems ent systems of nditions (eg, , lighting,), emergency
- General structural aspects (eg. ger stability, allowable loads, mate efficiency,) ure - Specific structural Aspects [eg. Structural Aspects [eg. Structural Aspects] - Specific structural Aspects [eg. Structural Aspects] - Consistency with the uses - General Plants [eg. distribution (production) of energy, management the general environmental comparison of the exchange communication systems] - Specific Pants (systems of management, detection, contrast at at intenance - Conservation work - Participation of adaptation to the nergy is systems, cooling, heating, cooling, attructuration localized systems of transport energy constrained systems, cooling, heating, cooling, attructuration localized systems of transport energy calles,)] - Machinery and transport equipment - Devices (command and contration contrast at attructuration contrast at attraction contrast at a systems of transport energy conta	rials, quality, ructural safety e escape) and ntion systems ent systems of nditions (eg, , lighting,), emergency
Plant	rials, quality, ructural safety e escape) and ntion systems ent systems of nditions (eg, , lighting,), emergency
Plant	nuctural safety e escape) and ntion systems ent systems of nditions (eg, , lighting,), emergency
Plant	ttion systems ent systems of nditions (eg, , lighting,), emergency
safe places] - Consistency with the uses - General Plants [eg. distribu (production) of energy, managem the general environmental conheating, cooling, air exchange communication systems] Plant - Specific Pants (systems of management, detection, contrast at conservation work - Participation of adaptation to the n - Machine [tool, operator, auxiliary (collection systems, cooling, heating, cooling, heating, - Work Equipment [instrumentation localized systems of transport ener cables,)] - Machinery and transport equipment - Devices (command and contr	ntion systems ent systems of inditions (eg, , lighting,), emergency
- Consistency with the uses - General Plants [eg. distribution (production) of energy, managementhe general environmental contenting, cooling, air exchange communication systems] Plant - - Specific Pants (systems of management, detection, contrast an environmental contenting) - Conservation work - Participation of adaptation to the nergy of adaptation to the nergy of adaptation to the nergy of collection systems, cooling, heating, work Equipment [instrumentation localized systems of transport energy cables,)] - Machinery and transport equipment - - Devices (command and contrast)	ent systems of nditions (eg, , lighting,), emergency
- General Plants [eg. distribution (production) of energy, management the general environmental condition (production) of energy, management environmental condition (production) of energy, management environmental condition (production) of energy, management, conservation systems] - Specific Pants (systems) - Specific Pants (systems) - Conservation work - Participation of adaptation to the n - Machine [tool, operator, auxiliary (collection systems, cooling, heating, work Equipment [instrumentation localized systems of transport energicables,)] - Machinery and transport equipment - Devices (command and contr	ent systems of nditions (eg, , lighting,), emergency
Plant the general environmental co- heating, cooling, air exchange communication systems] - Specific Pants (systems of management, detection, contrast at intenance - Conservation work - Participation of adaptation to the m - Machine [tool, operator, auxiliary (collection systems, cooling, heating, - Work Equipment [instrumentation localized systems of transport ener cables,)] - Machinery and transport equipment - Devices (command and contrast)	nditions (eg, , lighting,), emergency
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collection systems, cooling, heating, - Work Equipment [instrumentation localized systems of transport energy cables,)] - Machinery and transport equipment - Devices (command and contrained)	orms
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bgy = localized systems of transport ener cables,)] - Machinery and transport equipment - Devices (command and contr	
egy cables,)] - Machinery and transport equipment - Devices (command and contr	
- Devices (command and contr	
security)	ol, signaling,
)
- Suitability to he development of spo	ecific
operations in the context itions of use - Installation	
- How to use	
- Maintenance status	
- Audit ;	
 Supervision; Procedures for workers; 	
- Procedures for machine operators:	
Procedures for personnel systems;	
 Procedures for supervisors; Procedures for special operations p 	ersonnel
- Information, formation and Traini	
- Test	
- Verification functionality before to onditions - Types of maintenance applied	use
- Revision	
- Updating systems	
- Raw materials and process product	
 Products resulting from process de al - biological Chemical pollutants (solid, liquid, solid) 	
genvironment - Physical pollutants (solid, inquit, p	
electromagnetic fields and radiation	
- Biological agents (eg, viruses, bacte - Environmental treatment (eg, ther	
ions for the	inii insulation,
nvironmental - Lighting	
- Massing available - Behaviour (available to any perso	on to produce
answers, determined from the	
family regarding social situations	
ubject aspects - Position in relation to the duty	avala and the
- Position in relation to the duty number of shifts	cycle and the
- Relationships with supervisors and	subordinates
- Contract / employment	
- Age - Work Experience	
- Conditions of health	
Aspects - Psycho-physical state (eg, depr	essed, sleepy,
drunk, drugged,) - Attitude (predisposition for a par	ticular mental
or physical activity)	acaiai mental
Vehicles / machinery / plant / motion, controlled by operator	equipment in
al volumes Vehicles / machinery / plant	/ equipment.
automated motion (controlled by PLC)	
Workers on the move	

N	IDIRECT CAUSES OF FIRST LEVEL
Deviation due to electrical problems, explosion, fire	 Electrical problem caused by a plant failure Electrical problem caused by static electricity Electrical problem caused by missing insulation Electrical problem caused by external radiation / lightning Explosion Fire Another case relating to electrical problems, explosion, fire
overflow, overturn, leak, flow, vaporisation, emission	 Solid state - overflowing, overturning Liquid state - leaking, ozing, flowing, splashing, spraying Gaseous state - vaporisation, aerosol formation, gas formation Pulverulent material - smoke generation, dust/particles in suspension/emission of Another case relating to overflow, overturn, leak, flow, vaporisation, emission
Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	 Break of material, at junctions, connections, material agent Break / release of personal protective equipment Break with explosion of splinters (wood, glass, metal, stone, plastic, etc.) agent material Another case involving rupture, fracture, rupture violent, sudden and loud agent material
Slipping, falling, loss of stability, collapse agent material	 Slip, fall, loss of stability, collapse of Material Agent placed above (which falls on the victim) Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim) Slip, fall, loss of stability, the collapse of a material agent - at the same level Another case relating to slipping, falling, loss of stability, collapse agent material
Loss of control (total or partial) of machine, means of transport or handling equipment, hand-held tool, object, animal	 Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material Problems of total or partial control of the means of transport / equipment material handling and / or substance (motorized or not) Problems of total or partial control of a means of transport / handling of people and / or animals Problems of total or partial control of hand tool (motorized or not) as well as the material machined by Problems of total or partial control of object (led, moved, moved, etc.). Problems of total or partial control of animal Another cause of problems related to total or partial control of machinery, transportation / handling equipment, hand tools or objects, animals
Slipping - Stumbling and falling - Fall of persons	 Fall of person from the top through the opening Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level Loss of balance - with the fall of man - from Loss of balance - with the fall of person - at the same level Slipping or tripping on machinery Another case involving slipping or tripping, loss of balance - with the fall of person
Body movement without any physical stress	 Walking on a sharp object Kneel, sit, lean against Being grabbed, dragged, or moved by something from their momentum Uncoordinated movements, gestures, inopportune, inappropriate Another cause relative movement of the body without physical exertion (which usually leads to an external injury)
Body movement under or with physical stress	 Lifting, carrying or standing Pushing, pulling, pulling Depositing, dropping Twisting, turning, turning Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physical exertion (which usually leads to an internal injury)
Shock, fright, violence, aggression, threat, presence	 Surprise, fear Violence, aggression, threat - including employees of the Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals Presence of the victim or a third party that creates in itself a danger to the victim / for himself and if any other Another case involving surprise, fright, violence, aggression, threat, presence

	[DIRECT CAUSE
	Contact with electric current, temperature	 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot Contact with object or cold or frozen Another case involving contact with electric current, temperature
	Contact with other material or substance	 Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with material or substance
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (the result of a fall) Horizontal motion, crash on / against Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion)
	Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
AND	contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
	Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping, crushing, crushing, etc
	Physical or mental effort	 Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
	Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans

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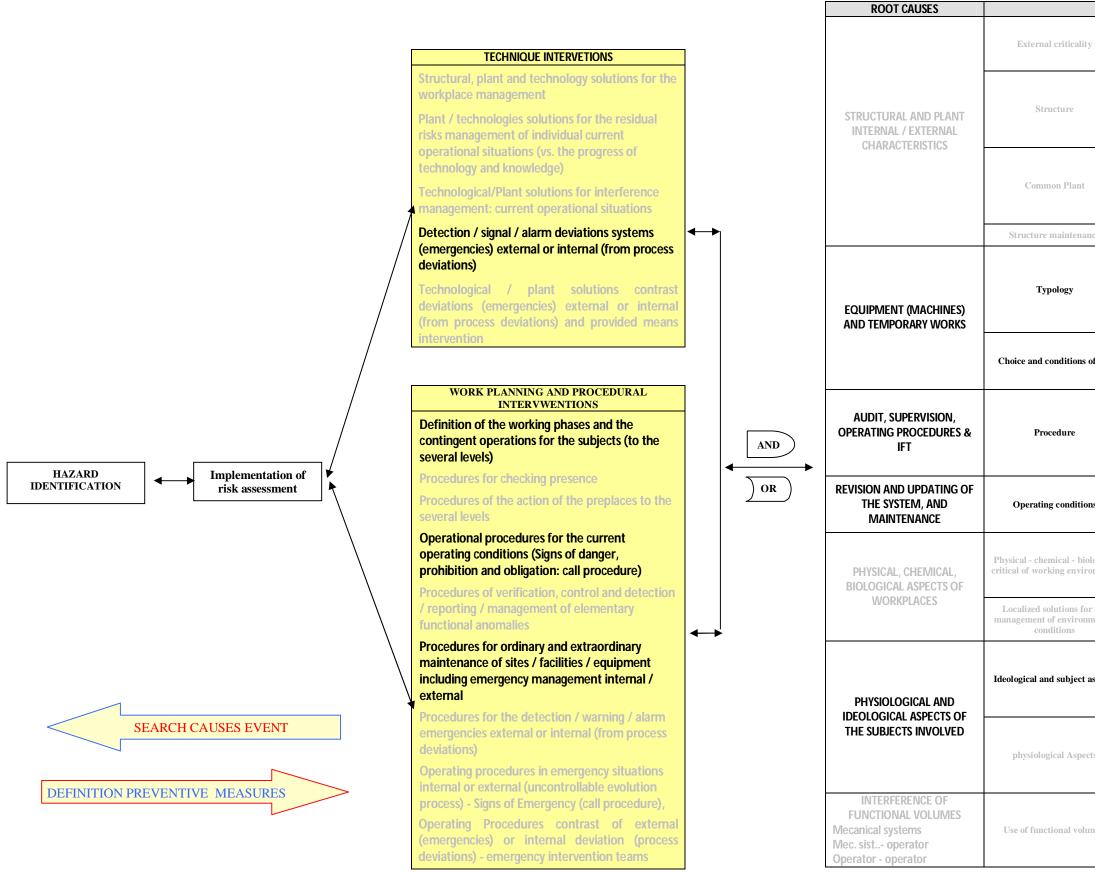
SEVERITY and TYPE OF INJURY (medical report data)

Death for internal and superficial injuries

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: amputation of the hand</i> Part of body injured: Hand Type of injury: Traumatic amputation	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	STRUCK BY MOVING OBJECT, COLLISIONS WITH - Struck by falling object – linked to the stamp fall against the worker's hand	If there was a correct maintenance of the control plant of the machine or there was a device to report anomalies of the machine and to interrupt availability of the machine	7
2	DEVIATION DUE TO ELECTRICAL PROBLEMS, EXPLOSION, FIRE - Electrical problem caused by a plant failure – related to electrical contact that starts descent of the stamp SLIPPING, FALLING, LOSS OF STABILITY, COLLAPSE AGENT MATERIAL - Slip, fall, loss of stability, collapse of Material Agent placed above (which falls on the victim) -related to the stamp falled	It must need a correct system of report anomalies of the machine and of its system of control	6

3	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Tipology – Devices (command and control, signalling, security) – linked to the control devices involves to the injury EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Choice and condition of use – Maintenance status - linked to the maintenance status of the control plant of the machine AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Procedures for workers - related to the procedures to be adopted AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Information, formation and Training - linked to the IFT that must be made on the procedures enacted REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – Operating conditions - Verification functionality before to use – related to the control procedure to adopt before to use the stamp machine REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – Operating conditions - Types of maintenance applied - related to the types of maintenance applied on the control system of the stamp machine	Evaluation of the choice of the solutions adopted	5
	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - linked to the stamp machine and its control device	EQUIPMENT (MACHINES) AND TEMPORARY WORKS –control device of stamp machine	
4	AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - related to the workers procedures and the resulting IFT	AUDIT, SUPERVISION AND OPERATING PROCEDURES & IFT - information, training and operator training at various levels,	4
	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE– related to the procedure of control and of the maintenance for the stamp machine	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – procedure of control of functionality of the machine	

5.1	Control device for stamp machine correctly works	A. Detection / signal / alarm deviations systems (emergencies) external or internal (from process deviations) - device that reports the anomalies of the machine	3
5.2	no upgrade of information, education and training Procedure of verification functionality before the use of the stamp machine	 A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related to the definition of the procedure of maintenance B. Definition of the working phases and the contingent operations for the subjects (to the several levels) - (related the definition of working procedures); C. Procedures for ordinary and extraordinary maintenance of sites / facilities / equipment including emergency management internal / external - procedure to do in emergency situations 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	introduction of a device that reports the anomalies of the stamp machine and consequently worker's information, formation and training	1



	INDIRECT CAUSES OF SECOND LEVEL
	 General criticality [boundary conditions (eg. topography, climate, availability of services,
lity	topography, climate, availability of services, sociological context)]
	- Specific criticality (seismicity, area exposed to
	floods, avalanches,)
	 General structural aspects (eg. general and local stability, allowable loads, materials, quality,
	efficiency,)
	- Specific structural Aspects [eg. Structural safety
	equipment, escape routes (eg fire escape) and safe
	places]Consistency with the uses
	- General Plants [eg. distribution systems]
	(production) of energy, management systems of the
	general environmental conditions (eg, heating,
nt	cooling, air exchange, lighting,), communication
	 systems] Specific Pants (systems of emergency management,
	detection, contrast and alarm)
nance	- Conservation work
lance	- Participation of adaptation to the norms
	- Machine [tool, operator, auxiliary (eg. pollutant
	 collection systems, cooling, heating,)] Work Equipment [instrumentation, equipment,
	localized systems of transport energy (eg. power
	cables,)]
	- Machinery and transport equipment
	 Devices (command and control, signaling, security) Works provisional (eg. scaffolding,)
	Works provisional (eg. scalfolding,) Suitability to he development of specific operations
	in the context
ns of use	- Installation
	- How to use
	- Maintenance status
	- Audit ;
	- Supervision;
	 Supervision; Procedures for workers; Procedures for machine operators; Procedures for personnel systems;
	 Supervision; Procedures for workers; Procedures for machine operators; Procedures for personnel systems; Procedures for supervisors;
	 Supervision; Procedures for workers; Procedures for machine operators; Procedures for personnel systems; Procedures for supervisors; Procedures for special operations personnel;
	 Supervision; Procedures for workers; Procedures for machine operators; Procedures for personnel systems; Procedures for supervisors;
	Supervision; Procedures for workers; Procedures for machine operators; Procedures for machine operators; Procedures for supervisors; Procedures for supervisors; Procedures for special operations personnel; Information, formation and Training Test Verification functionality before to use
tions	Supervision; Procedures for workers; Procedures for machine operators; Procedures for personnel systems; Procedures for supervisors; Procedures for special operations personnel; Information, formation and Training Test Verification functionality before to use Types of maintenance applied
tions	Supervision; Procedures for workers; Procedures for machine operators; Procedures for personnel systems; Procedures for supervisors; Procedures for special operations personnel; Information, formation and Training Verification functionality before to use Types of maintenance applied Revision
tions	Supervision; Procedures for workers; Procedures for machine operators; Procedures for personnel systems; Procedures for supervisors; Procedures for special operations personnel; Information, formation and Training Test Verification functionality before to use Types of maintenance applied Revision Updating systems
tions	Supervision; Procedures for workers; Procedures for machine operators; Procedures for personnel systems; Procedures for supervisors; Procedures for special operations personnel; Information, formation and Training Test Verification functionality before to use Types of maintenance applied Revision Updating systems Raw materials and process products Products resulting from process deviations
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biological ironment for the onmental	 Supervision; Procedures for workers; Procedures for machine operators; Procedures for supervisors; Procedures for special operations personnel; Information, formation and Training Test Verification functionality before to use Types of maintenance applied Revision Updating systems Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,) Environmental treatment (eg, thermal insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity)

	IDIRECT CAUSES OF FIRST LEVEL - Electrical problem caused by a plant failure
	 Electrical problem caused by a plant rature Electrical problem caused by static electricity
Deviation due to electrical	- Electrical problem caused by missing insulation
problems, explosion, fire	- Electrical problem caused by external radiation / lightning
F	- Explosion
	- Fire
	- Another case relating to electrical problems, explosion, fire
	- Solid state - overflowing, overturning
	 Liquid state - leaking, oozing, flowing, splashing, spraying Gaseous state - vaporisation, aerosol formation, gas formation
overflow, overturn, leak, flow, vaporisation, emission	 Gaseous state - vaporisation, acrossi formation, gas formation Pulverulent material - smoke generation, dust/particles i
vaporisation, emission	suspension/emission of
	- Another case relating to overflow, overturn, leak, flow
	vaporisation, emission
	- Break of material, at junctions, connections, material agent
Breakage, bursting, splitting,	- Break / release of personal protective equipment
slipping, fall, collapse of Material	 Break with explosion of splinters (wood, glass, metal, ston plastic, etc.) agent material
Agent	- Another case involving rupture, fracture, rupture violen
	sudden and loud agent material
	 Slip, fall, loss of stability, collapse of Material Agent place above (which falls on the victim)
	- Sliding, fall, loss of stability, collapse of agent material place
Slipping, falling, loss of stability,	below (which drags the victim)
collapse agent material	- Slip, fall, loss of stability, the collapse of a material agent -
	the same level
	- Another case relating to slipping, falling, loss of stabilit
	collapse agent material
	 Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material
	 Problems of total or partial control of the means of transport
	equipment material handling and / or substance (motorized of
	not)
Loss of control (total or partial) of	- Problems of total or partial control of a means of transport
machine, means of transport or	handling of people and / or animals
handling equipment, hand-held	- Problems of total or partial control of hand tool (motorized of
tool, object, animal	not) as well as the material machined by
	 Problems of total or partial control of object (led, moved moved, etc.).
	 Problems of total or partial control of animal
	- Another cause of problems related to total or partial control of
	machinery, transportation / handling equipment, hand tools of
	objects, animals
	- Fall of person from the top through the opening
	- Slipping or tripping - with the fall of man - from
Slipping - Stumbling and falling -	 Slipping or tripping - with the fall of person - at the same level Loss of balance - with the fall of man - from
Fall of persons	 Loss of balance - with the fall of person - at the same level
_	 Slipping or tripping on machinery
	 Another case involving slipping or tripping, loss of balance
	with the fall of person
	- Walking on a sharp object
	- Kneel, sit, lean against
	- Being grabbed, dragged, or moved by something from the
physical stress	- Uncoordinated movements, gestures, inopportun
	- Uncoordinated movements, gestures, inopportun inappropriate
	- Another cause relative movement of the body without physic
	exertion (which usually leads to an external injury)
	- Lifting, carrying or standing
	- Pushing, pulling, pulling
Body movement under or with	- Depositing, dropping
physical stress	- Twisting, turning
	 Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physic
	- Another cause relative movement of the body during physical exertion (which usually leads to an internal injury)
	- Surprise, fear
	 Violence, aggression, threat - including employees of the
	- Violence, aggression, threat-from people external to the
Chaoly fright sides	company to the victims in the context of their function (ban
Shock, fright, violence, aggression, threat, presence	robbery, assaulting bus drivers, etc.).
	- Aggression, mobs, violence by animals
	 Presence of the victim or a third party that creates in itself danger to the victim / for himself and if any other Another case involving surprise, fright, violence, aggression

	IRECT CAUSE
	 Indirect contact with the electrical circu lightning (passive) Direct contact with electricity, suffer a
Contact with electric current, temperature	electric discharge in the body - Contact with flame or object / warm or re
	hot - Contact with object or cold or frozen - Another case involving contact with electr
	Contact with hazardous substances f
	 Contact with initiatious substances in nasal, oral, inhalation Contact with hazardous substances throug the skin or eyes
Contact with other material or substance	 Contact with hazardous substances throug the digestive system, swallowing or eating Drowning in a liquid
	 Burial under a solid Immersion in a gas, in a suspension particles
	- Another case involving contact with materi or substance
Cauching vorticelly and / or	- Vertical motion, crash on / against (t result of a fall)
Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground	 Horizontal motion, crash on / against Another case involving crushing vertic and / or horizontal moving, fall on / again
(victim in motion)	an immovable object / ground (victim motion)
	 Struck by object projected Struck by falling object Struck by object that oscillates
Struck by moving object, collisions	- Struck by object in rotation, motio displacement, including vehicles
with	 Collision with a moving object, includin vehicles - a collision with a person (t victim is moving)
	- Another case involving a collision by movin object, collision with
	- Contact with a sharp Material Agent (knift blade)
contact with sharp material agent,	Contact with a sharp Material Agent (nai sharp tool) Contact agent with hard or abrasi
pointed, hard, abrasive	material - Another case concerning materials
	contact with agent edgy, sharp, har abrasive
	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between
Nesting, trapping, crushing, crushing, pinching, etc	 Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or mo
	parts of it - By pinching - Another case involving nesting, trappin
	crushing, crushing, pinching, etc - Physical effort at the expense of t
Physical or mental effort	musculoskeletal system - Physical exertion caused by radiation, nois light, pressure
A ADDITED OF MELABOR CALOFE	 Effort psychic, mental shock Another case involving mental or physic
	effort - Bite
Bite, calcium, etc., by animals or humans	 Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., 1

AND

SEVERITY

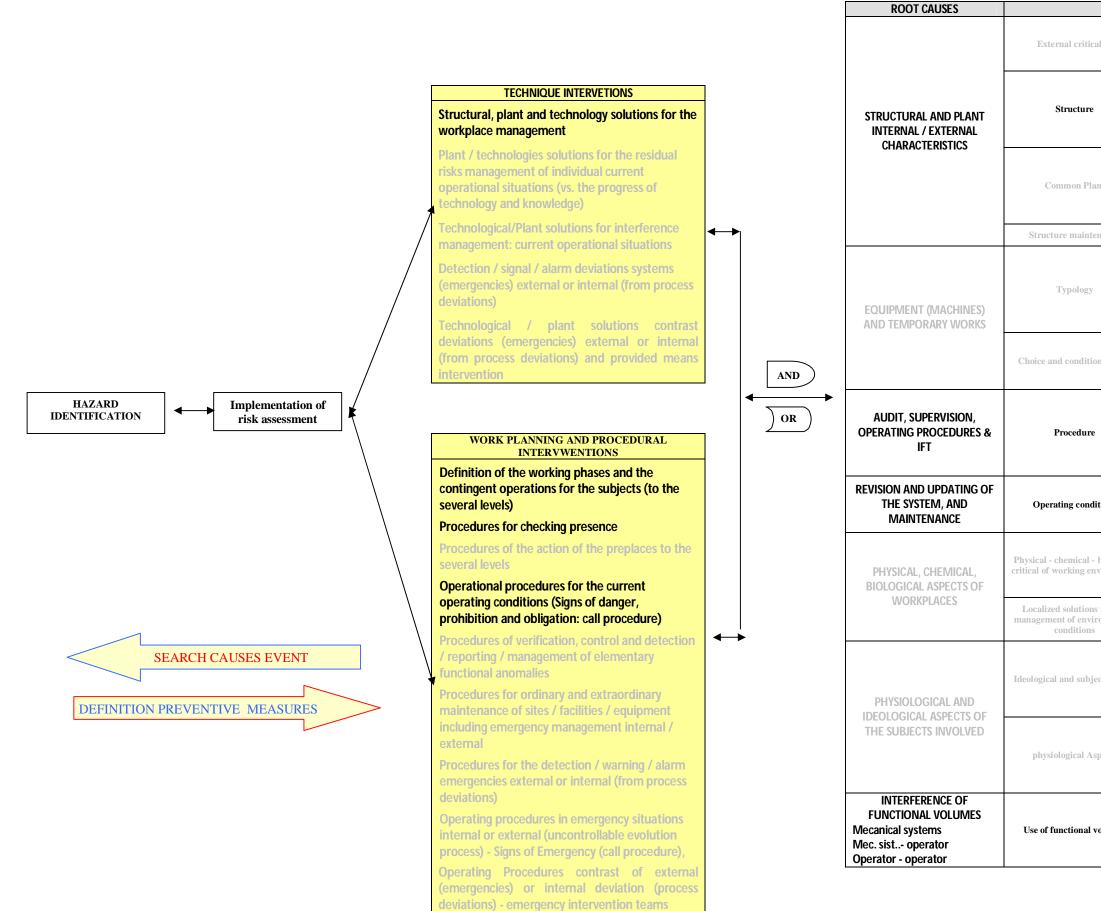
and TYPE OF INJURY (medical report data)

Traumatic amputation of the hand

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 7500 Id (death)</i> Part of body injured: Total body and internal organs Type of injury: Death of multiple trauma	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	STRUCK BY MOVING OBJECT, COLLISIONS WITH - Struck by falling object – linked to the metal pipes fall	There will not be a person under the temporary structure of metal pipes or the temporary structure must built in a correctly way	7
2	SLIPPING, FALLING, LOSS OF STABILITY, COLLAPSE AGENT MATERIAL - Slip, fall, loss of stability, collapse of Material Agent placed above (which falls on the victim) -related to the metal pipes fall LOSS OF CONTROL (TOTAL OR PARTIAL) OF MACHINE, MEANS OF TRANSPORT OR HANDLING EQUIPMENT, HAND-HELD TOOL, OBJECT, ANIMAL - Problems of total or partial control of object (led, moved, moved, etc.). – related to inferior metal pipes moved	It must need a correct way to built the temporary structure of metal pipes and consequently procedure	6

3	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,) – - linked to the temporary structure of metal pipes AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Procedures for workers and supervisor - related to the procedures to be adopted AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Information, formation and Training - linked to the IFT that must be made on the procedures enacted REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – Operating conditions - Verification functionality before to use – related to the control procedure to adopt before to use the temporary structure INTERFERENCE OF FUNCTIONAL VOLUMES - Use of functional volumes - related to the presence of people in under the temporary structure	Evaluation of the choice of the solutions adopted	5	
	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - <i>linked to the temporary structure</i>	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – temporary structure of metal pipes	. 4	
	AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - related to the workers procedures and the resulting IFT	AUDIT, SUPERVISION AND OPERATING PROCEDURES & IFT - information, training and operator training at various levels,		
4	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – related to the procedure of control and of the maintenance for the stamp machine	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – procedure of control of functionality of the structure		
	INTERFERENCE OF FUNCTIONAL VOLUMES related to the presence of the worker under the structure	INTERFERENCE OF FUNCTIONAL VOLUMES related to the control of presence in the work area		

5.1	Temporary structure built in a wrong way	A. Structural, plant and technology solutions for the workplace management - temporary structure correctly mounted	3
5.2	no upgrade of information, education and training Procedure of verification functionality before the use Procedure of the presence control	 A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related to the definition of the procedure to built the structurer B. Definition of the working phases and the contingent operations for the subjects (to the several levels) - (related the definition of working procedures); C. Procedures for checking presence - procedure to repor the presence of the worker 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	introduction of procedure to check the presence of the worker and to built in a correct way the temporary structure	1



	INDIRECT CAUSES OF SECOND LEVEL
cality	 General criticality [boundary conditions (eg. topography, climate, availability of services, sociological context)] Specific criticality (seismicity, area exposed to floods, avalanches,)
2	General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,) Specific structural Aspects [eg. Structural safety equipment, escape routes (eg fire escape) and safe places] General structural denses
ant	Consistency with the uses General Plants [eg. distribution systems (production) of energy, management systems of the general environmental conditions (eg, heating, cooling, air exchange, lighting,), communication systems] Specific Pants (systems of emergency management,
	detection, contrast and alarm) - Conservation work
enance ,	 Participation of adaptation to the norms Machine [tool, operator, auxiliary (eg. pollutant collection systems, cooling, heating,)] Work Equipment [instrumentation, equipment, localized systems of transport energy (eg. power cables,)] Machinery and transport equipment Devices (command and control, signaling, security) Works provisional (eg. scaffolding,)
ons of use	 Suitability to he development of specific operations in the context Installation How to use Maintenance status
2	 Audit : Supervision; Procedures for workers; Procedures for machine operators; Procedures for personnel systems; Procedures for supervisors; Procedures for special operations personnel; Information, formation and Training
litions	Test Verification functionality before to use Types of maintenance applied Revision Updating systems
- biological nvironment	 Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological genets (eg viruses bacteria)
ns for the ironmental s	 Environmental treatment (eg. thermal insulation, acoustic,) Lighting Massing available
ject aspects	 Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment
spects	 Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity)
volumes	Vehicles / machinery / plant / equipment in motion, controlled by operator Vehicles / machinery / plant / equipment, automated motion (controlled by PLC) Workers on the move

OR

	IRECT CAUSES OF FIRST LEVEL - Electrical problem caused by a plant failure
Deviation due to electrical problems, explosion, fire	 Electrical problem caused by static electricity Electrical problem caused by missing insulation Electrical problem caused by external radiation / lightning Explosion
	- Fire
	 Another case relating to electrical problems, explosion, fire Solid state - overflowing, overturning
overflow, overturn, leak, flow, vaporisation, emission	 Liquid state - leaking, oozing, flowing, splashing, spraying Gaseous state - vaporisation, aerosol formation, gas formation Pulverulent material - smoke generation, dust/particles in suspension/emission of Another case relating to overflow, overturn, leak, flow,
	vaporisation, emission
Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	 Break of material, at junctions, connections, material agent Break / release of personal protective equipment Break with explosion of splinters (wood, glass, metal, stone, plastic, etc.) agent material Another case involving rupture, fracture, rupture violent,
	 sudden and loud agent material Slip, fall, loss of stability, collapse of Material Agent placed
Slipping, falling, loss of stability, collapse agent material	 Ship, fail, loss of stability, collapse of valential Agent placed above (which falls on the victim) Sliding, fail, loss of stability, collapse of agent material placed below (which drags the victim) Slip, fail, loss of stability, the collapse of a material agent - at the same level Another case relating to slipping, falling, loss of stability, collapse agent material
	 Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material Problems of total or partial control of the means of transport / equipment material handling and / or substance (motorized or not)
Loss of control (total or partial) of	- Problems of total or partial control of a means of transport /
machine, means of transport or handling equipment, hand-held	 handling of people and / or animals Problems of total or partial control of hand tool (motorized or
tool, object, animal	 not) as well as the material machined by Problems of total or partial control of object (led, moved, moved, etc.).
	 Problems of total or partial control of animal Another cause of problems related to total or partial control of machinery, transportation / handling equipment, hand tools or objects, animals
Slipping - Stumbling and falling - Fall of persons	 Fall of person from the top through the opening Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level Loss of balance - with the fall of person - at the same level Loss of balance - with the fall of person - at the same level
	 Slipping or tripping on machinery Another case involving slipping or tripping, loss of balance - with the fall of person
Body movement without any physical stress	 Walking on a sharp object Kneel, sit, lean against Being grabbed, dragged, or moved by something from their momentum Uncoordinated movements, gestures, inopportune,
	 inappropriate Another cause relative movement of the body without physical exertion (which usually leads to an external injury)
physical stress	 Lifting, carrying or standing Pushing, pulling, pulling Depositing, dropping Twisting, turning, turning Step false twisting of the leg or ankle, slipping without falling
	 Another cause relative movement of the body during physical exertion (which usually leads to an internal injury) Surprise, fear
	 Violence, aggression, threat - including employees of the Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals Presence of the victim or a third party that creates in itself a danger to the victim / for himself and if any other
	Another case involving surprise, fright, violence, aggression, threat, presence

]	DIRECT CAUSE
	Contact with electric current, temperature	 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot Contact with object or cold or frozen Another case involving contact with electric current, temperature
	Contact with other material or substance	 Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with material or substance
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (the result of a fall) Horizontal motion, crash on / against Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion)
AND	Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
	contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
	Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping,
	Physical or mental effort	 crushing, crushing, pinching, etc Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
	Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans

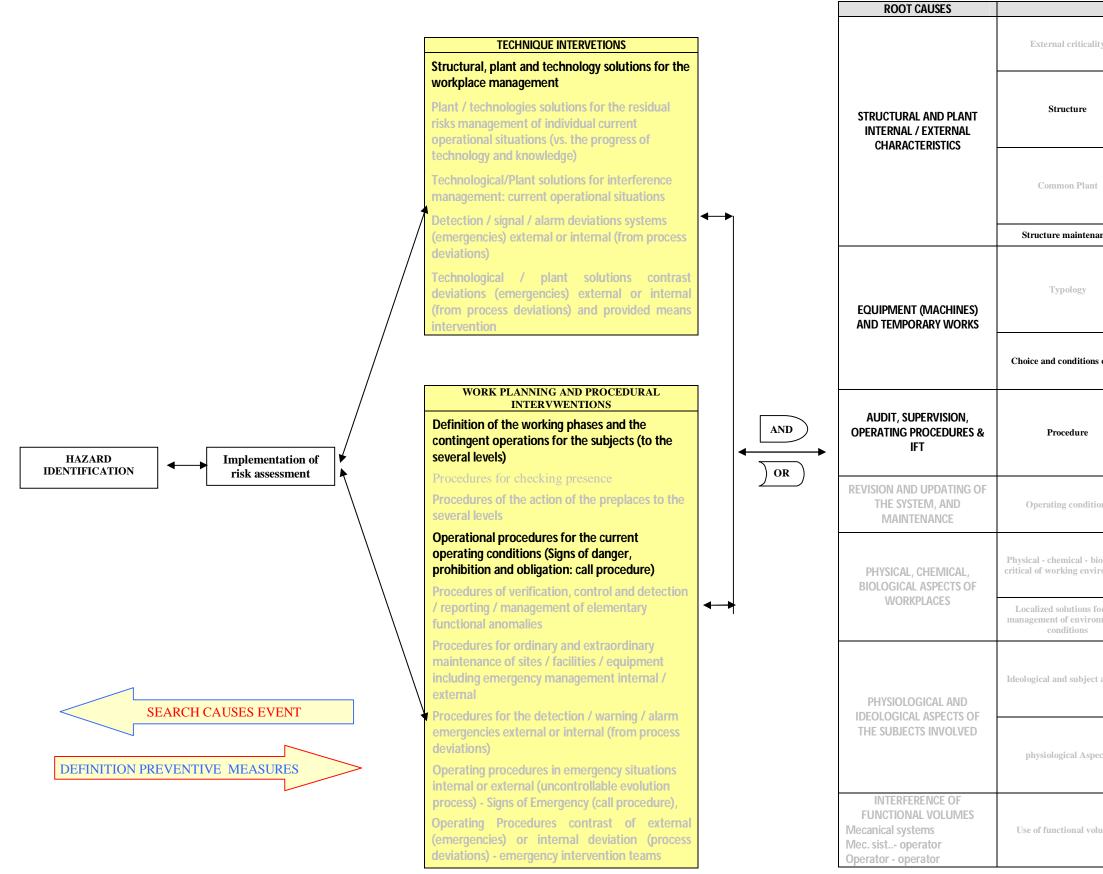
SEVERITY and TYPE OF INJURY (medical report data)

Death for multiple trauma

-

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 7500 Id (death)</i> Part of body injured: Total body and internal organs Type of injury: Death	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	CRUSHING VERTICALLY AND / OR HORIZONTALLY MOVING, FALL ON / AGAINST AN IMMOVABLE OBJECT / GROUND (VICTIM IN MOTION) - Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion) – <i>linked to the worker fall</i> by the scale	It is necessary a correct and complete risk analysis	7
2	SLIPPING, FALLING, LOSS OF STABILITY, COLLAPSE AGENT MATERIAL - Another case involving slipping or tripping, loss of balance - with the fall of person) -related to worker fall BODY MOVEMENT WITHOUT ANY PHYSICAL STRESS - Uncoordinated movements, gestures, inopportune, inappropriate – related to the uncoordinated movements of the worker during the scale descent	It must need a risk analysis and consequently procedure and information, formation and training and a correct supervision of workers	6
3	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,) – - linked to the scale of the stack AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Procedures for workers and supervisor - related to the procedures to be adopted AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Information, formation and Training - linked to the IFT that must be made on the procedures enacted EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Choice and conditions of use - How to use - related to the use of the stack scale	Evaluation of the choice of the solutions adopted	5

4	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - linked to the structure AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - related to the workers procedures and the resulting IFT EQUIPMENT (MACHINES) AND TEMPORARY WORKS – related to the equipment use in the processing New structure to use for moving around the area	 STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – structure where the worker moves AUDIT, SUPERVISION AND OPERATING PROCEDURES & IFT - information, training and operator training at various levels, EQUIPMENT (MACHINES) AND TEMPORARY WORKS – equipment used during the worker movements A. Structural, plant and technology solutions for the workplace management - a correct organization of the work area 	4
5.2	Risk analysis complete information, education and training Procedure of the worker	A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related to the organization of the work area B. Definition of the working phases and the contingent operations for the subjects (to the several levels) - (related the definition of working procedures);	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Realization of a correct and complete risk analysis with a consequently elaboration of procedure and information, formation and training of workers	1



	INDIRECT CAUSES OF SECOND LEVEL
cality	 General criticality [boundary conditions (eg. topography, climate, availability of services, sociological context)] Specific criticality (seismicity, area exposed to
	floods, avalanches,)
	 General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,)
-	 Specific structural Aspects [eg. Structural safety equipment, escape routes (eg fire escape) and safe places] Consistency with the uses
ant	 General Plants [eg. distribution systems (production) of energy, management systems of the general environmental conditions (eg, heating, cooling, air exchange, lighting,), communication systems]
	- Specific Pants (systems of emergency management, detection, contrast and alarm)
enance	- Conservation work
	 Participation of adaptation to the norms Machine [tool, operator, auxiliary (eg. pollutant collection systems, cooling, heating,)] Work Equipment [instrumentation, equipment, localized systems of transport energy (eg. power cables,)] Machinery and transport equipment Devices (command and control, signaling, security) Works provisional (eg. scaffolding,)
ons of use	 Suitability to he development of specific operations in the context Installation How to use Maintenance status
2	 Audit ; Supervision; Procedures for workers; Procedures for machine operators; Procedures for personnel systems; Procedures for supervisors; Procedures for special operations personnel; Information, formation and Training
litions	Test Verification functionality before to use Types of maintenance applied Revision Updating systems
- biological nvironment	 Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,)
ns for the ironmental	 Environmental treatment (eg. thermal insulation, acoustic,) Lighting Massing available
ect aspects	 Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment
spects	 Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity)
volumes	Vehicles / machinery / plant / equipment in motion, controlled by operator Vehicles / machinery / plant / equipment, automated motion (controlled by PLC) Workers on the move

OR

IN	DIRECT CAUSES OF FIRST LEVEL
Deviation due to electrical problems, explosion, fire overflow, overturn, leak, flow, vaporisation, emission	 Electrical problem caused by a plant failure Electrical problem caused by static electricity Electrical problem caused by missing insulation Electrical problem caused by external radiation / lightning Explosion Fire Another case relating to electrical problems, explosion, fire Solid state - overflowing, overturning Liquid state - leaking, oozing, flowing, splashing, spraying Gaseous state - vaporisation, aerosol formation, gas formation Pulverulent material - smoke generation, dust/particles in suspension/emission of Another case relating to overflow, overturn, leak, flow,
Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	 vaporisation, emission Break of material, at junctions, connections, material agent Break / release of personal protective equipment Break with explosion of splinters (wood, glass, metal, stone, plastic, etc.) agent material Another case involving rupture, fracture, rupture violent, sudden and loud agent material
Slipping, falling, loss of stability, collapse agent material	 Slip, fall, loss of stability, collapse of Material Agent placed above (which falls on the victim) Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim) Slip, fall, loss of stability, the collapse of a material agent - at the same level Another case relating to slipping, falling, loss of stability, collapse agent material
Loss of control (total or partial) of machine, means of transport or handling equipment, hand-held tool, object, animal	 Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material Problems of total or partial control of the means of transport / equipment material handling and / or substance (motorized or not) Problems of total or partial control of a means of transport / handling of people and / or animals Problems of total or partial control of hand tool (motorized or not) as well as the material machined by Problems of total or partial control of object (led, moved, moved, etc.). Problems of total or partial control of animal Another cause of problems related to total or partial control of machinery, transportation / handling equipment, hand tools or objects, animals
Slipping - Stumbling and falling - Fall of persons	 Fail of person from the top through the opening Slipping or tripping - with the fail of man - from Slipping or tripping - with the fail of person - at the same level Loss of balance - with the fail of man - from Loss of balance - with the fail of person - at the same level Slipping or tripping on machinery Another case involving slipping or tripping, loss of balance - with the fail of person
Body movement without any physical stress	 Walking on a sharp object Kneel, sit, lean against Being grabbed, dragged, or moved by something from their momentum Uncoordinated movements, gestures, inopportune, inappropriate Another cause relative movement of the body without physical exertion (which usually leads to an external injury)
Body movement under or with physical stress	 Lifting, carrying or standing Pushing, pulling, pulling Depositing, dropping Twisting, turning, turning Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physical exertion (which usually leads to an internal injury)
Shock, fright, violence, aggression, threat, presence	 Surprise, fear Violence, aggression, threat - including employees of the Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals Presence of the victim or a third party that creates in itself a danger to the victim / for himself and if any other Another case involving surprise, fright, violence, aggression, threat, presence

	DIRECT CAUSE
	 Indirect contact with the electrical circuit, lightning (passive)
	- Direct contact with electricity, suffer an
Contact with electric current,	electric discharge in the body
temperature	- Contact with flame or object / warm or red-
	hot
	- Contact with object or cold or frozen
	- Another case involving contact with electric
	current, temperature
	- Contact with hazardous substances for
	nasal, oral, inhalation
	 Contact with hazardous substances through the skin or eves
	- Contact with hazardous substances through
Contact with other material or	the digestive system, swallowing or eating
substance	 Drowning in a liquid
	- Burial under a solid
	- Immersion in a gas, in a suspension of
	particles
	- Another case involving contact with material
	or substance
	- Vertical motion, crash on / against (the
Crushing vertically and / or	result of a fall)
horizontally moving, fall on / against	- Horizontal motion, crash on / against
an immovable object / ground	- Another case involving crushing vertical
(victim in motion)	and / or horizontal moving, fall on / against
((1001111111101010))	an immovable object / ground (victim in
	motion)
	- Struck by object projected
	- Struck by falling object
	 Struck by object that oscillates Struck by object in rotation, motion
Struck by moving object, collisions	- Struck by object in rotation, motion displacement, including vehicles
	- Collision with a moving object, including
	vehicles - a collision with a person (the
	victim is moving)
	- Another case involving a collision by moving
	object, collision with
	- Contact with a sharp Material Agent (knife
	blade)
	- Contact with a sharp Material Agent (nail /
contact with sharp material agent,	sharp tool)
pointed, hard, abrasive	- Contact agent with hard or abrasive
E come al and all and and a	material
	- Another case concerning materials in
	contact with agent edgy, sharp, hard
	 abrasive Nesting, trapping, crushing in / inside
	 Nesting, trapping, crushing under Nesting, trapping, crushing between
	 Resting, trapping, crushing between Tearing, cutting of a member, a hand, a
Nesting, trapping, crushing,	- rearing, cutting of a member, a nand, a finger or more parts of the body
	- Constrict of whole body or of one or more
	parts of it
	- By pinching
	- Another case involving nesting, trapping
	crushing, crushing, pinching, etc
	- Physical effort at the expense of the
	musculoskeletal system
	- Physical exertion caused by radiation, noise
Physical or mental effort	light, pressure
	- Effort psychic, mental shock
	- Another case involving mental or physical
	effort
	- Bite
Bite, calcium, etc. by animals or	BitePuncture by insects or fish
Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation
Bite, calcium, etc., by animals or humans	BitePuncture by insects or fish

AND

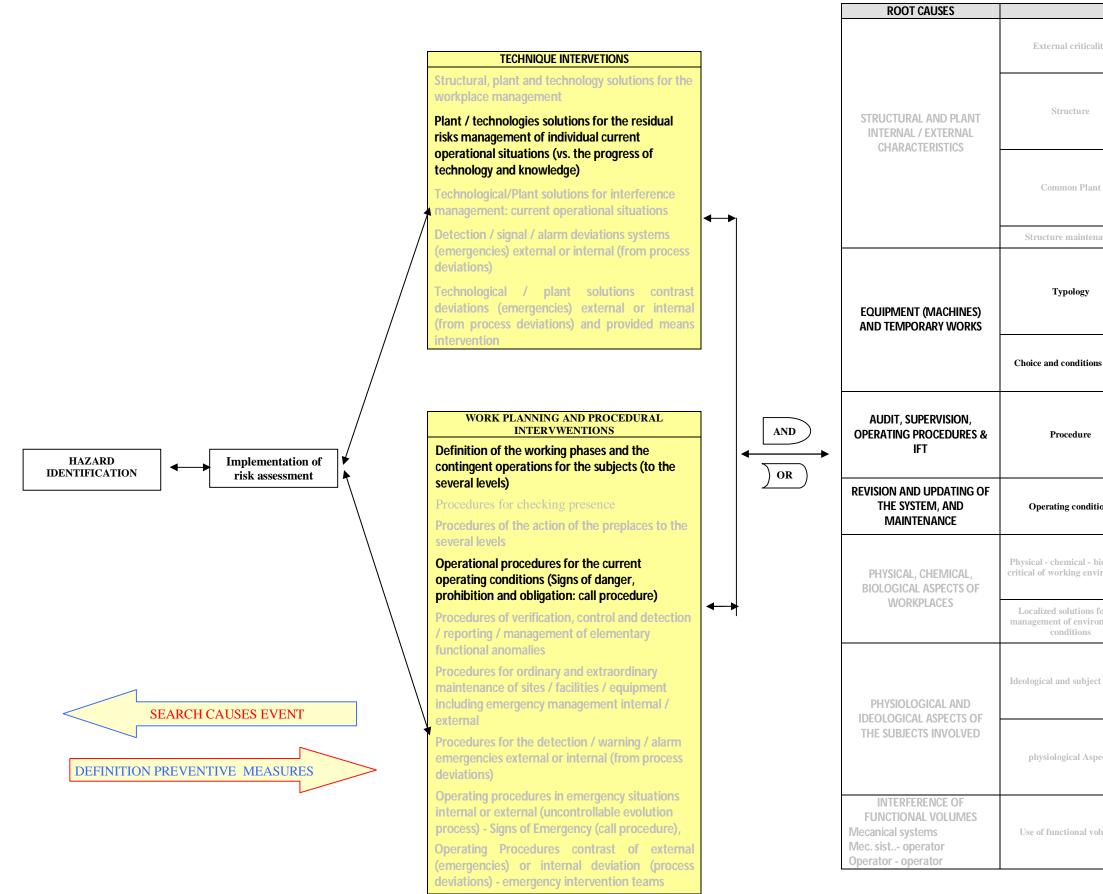
SEVERITY and TYPE OF INJURY (medical report data)

Death

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 7500 Id (death)</i> Part of body injured: Head Type of injury: Death for head trauma	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	CRUSHING VERTICALLY AND / OR HORIZONTALLY MOVING, FALL ON / AGAINST AN IMMOVABLE OBJECT / GROUND (VICTIM IN MOTION) - Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion) – linked to the crush of the worker to the wall of the gallery	It is necessary a correct and complete risk analysis and an adjustment of the equipments	7
2	SLIPPING, FALLING, LOSS OF STABILITY, COLLAPSE AGENT MATERIAL - Another case involving slipping or tripping, loss of balance - with the fall of person) -related to the subsidence of the quarterdeck BODY MOVEMENT WITHOUT ANY PHYSICAL STRESS - Loss of balance - with the fall of person - at the same level – related to the uncoordinated movements of the worker after the subsidence of the quarterdeck	It must need a risk analysis and consequently procedure and information, formation and training and a correct supervision of workers; or a suitable maintenance of the machine	6

3	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Typology - Works provisional (eg. scaffolding,) - linked to the quarterdeck EQUIPMENT (MACHINES) AND TEMPORARY WORKS -Choice and conditions of use – How to use - linked to the use of the quarterdeck EQUIPMENT (MACHINES) AND TEMPORARY WORKS -Choice and conditions of use – Maintenance status – related to the maintenance status of quarterdeck AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Procedures for workers and supervisor - related to the procedures to be adopted AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Information, formation and Training - linked to the IFT that must be made on the procedures enacted REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE - Operating conditions - Verification functionality before to use – related to the check to do before of the use of quarterdeck	Evaluation of the choice of the solutions adopted	5
	AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - related to the workers procedures and the resulting IFT	AUDIT, SUPERVISION AND OPERATING PROCEDURES & IFT - information, training and operator training at various levels,	
4	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – related to the machine used in the processing	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – quarterdeck used during the processing	4
	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE - related to check to do before the use of the quarterdeck	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE control to do before the use of the machine	

5.1	New quarterdeck to use during the processing	A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - a new quarterdeck to use	3
5.2	Risk analysis complete information, education and training Procedure of the worker	 A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related to the organization of the work area B. Definition of the working phases and the contingent operations for the subjects (to the several levels) - (related the definition of working procedures); 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Realization of a correct and complete risk analysis with a consequently elaboration of procedure and information, formation and training of workers	1



	INDIRECT CAUSES OF SECOND LEVEL
	- General criticality [boundary conditions (eg. topography, climate, availability of services,
cality	sociological context)]
	 Specific criticality (seismicity, area exposed to floods, avalanches,)
	- General structural aspects (eg. general and local
	stability, allowable loads, materials, quality, efficiency,)
	- Specific structural Aspects [eg. Structural safety
	equipment, escape routes (eg fire escape) and safe places]
	- Consistency with the uses
	- General Plants [eg. distribution systems (production) of energy, management systems of the
	general environmental conditions (eg, heating,
ant	cooling, air exchange, lighting,), communication systems]
	- Specific Pants (systems of emergency management,
	detection, contrast and alarm) - Conservation work
enance	- Participation of adaptation to the norms
	- Machine [tool, operator, auxiliary (eg. pollutant collection systems, cooling, heating,)]
	- Work Equipment [instrumentation, equipment,
	localized systems of transport energy (eg. power cables,)]
	- Machinery and transport equipment
	 Devices (command and control, signaling, security) Works provisional (eg. scaffolding,)
	- Suitability to he development of specific operations
ons of use	in the context - Installation
	- How to use
	Maintenance status Audit :
	- Supervision;
	 Procedures for workers; Procedures for machine operators;
e	- Procedures for personnel systems;
	 Procedures for supervisors; Procedures for special operations personnel;
	- Information, formation and Training
	Test Verification functionality before to use
litions	- Types of maintenance applied - Revision
	- Updating systems
	- Raw materials and process products
- biological	 Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous)
nvironment	- Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,)
	 Biological agents (eg, viruses, bacteria,)
is for the	- Environmental treatment (eg. thermal insulation, acoustic,)
ironmental	- Lighting
	- Massing available - Behaviour (available to any person to produce
	answers, determined from the environment, family
ect aspects	regarding social situations, groups, and objects) - Position in relation to the duty cycle and the
T	number of shifts
	 Relationships with supervisors and subordinates Contract / employment
	- Age
	 Work Experience Conditions of health
spects	- Psycho-physical state (eg, depressed, sleepy, drunk,
	drugged,) - Attitude (predisposition for a particular mental or
	physical activity)
	Vehicles / machinery / plant / equipment in motion,
volumes	controlled by operator Vehicles / machinery / plant / equipment, automated
v otunică	motion (controlled by PLC)
	Workers on the move

OR

IN	DIRECT CAUSES OF FIRST LEVEL
	- Electrical problem caused by a plant failure
	 Electrical problem caused by static electricity Electrical problem caused by missing insulation
Deviation due to electrical	 Electrical problem caused by missing insulation Electrical problem caused by external radiation / lightning
problems, explosion, fire	 Electrical problem caused by external radiation / lightning Explosion
	- Explosion
	 Another case relating to electrical problems, explosion, fire
	 Solid state - overflowing, overturning
	 Liquid state - leaking, oozing, flowing, splashing, spraying
overflow, overturn, leak, flow,	- Gaseous state - vaporisation, aerosol formation, gas formation
vaporisation, emission	- Pulverulent material - smoke generation, dust/particles in
	suspension/emission of
	- Another case relating to overflow, overturn, leak, flow.
	vaporisation, emission
	- Break of material, at junctions, connections, material agent
Breakage, bursting, splitting,	- Break / release of personal protective equipment
slipping, fall, collapse of Material	- Break with explosion of splinters (wood, glass, metal, stone,
Agent	plastic, etc.) agent material
	- Another case involving rupture, fracture, rupture violent,
	sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
	above (which falls on the victim)
Slipping, falling, loss of stability,	- Sliding, fall, loss of stability, collapse of agent material placed
collapse agent material	below (which drags the victim)
F "Bour materia	 Slip, fall, loss of stability, the collapse of a material agent - at the same level
	 Another case relating to slipping, falling, loss of stability, collapse agent material
	- Problems of total or partial control of the machine (including
	- Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material
	 Problems of total or partial control of the means of transport /
	equipment material handling and / or substance (motorized or
	not)
Loss of control (total or partial) of	- Problems of total or partial control of a means of transport /
Loss of control (total or partial) of machine, means of transport or	handling of people and / or animals
	 Problems of total or partial control of hand tool (motorized or
tool, object, animal	not) as well as the material machined by
	 Problems of total or partial control of object (led, moved.
	moved, etc.).
	- Problems of total or partial control of animal
	- Another cause of problems related to total or partial control of
	machinery, transportation / handling equipment, hand tools or
	objects, animals
	- Fall of person from the top through the opening
	- Slipping or tripping - with the fall of man - from
	- Slipping or tripping - with the fall of person - at the same level
Slipping - Stumbling and falling -	- Loss of balance - with the fall of man - from
Fall of persons	- Loss of balance - with the fall of person - at the same level
	- Slipping or tripping on machinery
	- Another case involving slipping or tripping, loss of balance -
	with the fall of person
	- Walking on a sharp object
	- Kneel, sit, lean against
	- Being grabbed, dragged, or moved by something from their
	momentum
Physical stress	- Uncoordinated movements, gestures, inopportune
	inappropriate
	- Another cause relative movement of the body without physical
	exertion (which usually leads to an external injury)
	- Lifting, carrying or standing
	- Pushing, pulling, pulling
Body movement under or with	- Depositing, dropping
physical stress	- Twisting, turning, turning Stor folge traiting of the log or orbits dimping without folling
	 Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physical
	exertion (which usually leads to an internal injury)
	- Surprise, fear
	 Violence, aggression, threat - including employees of the Violence, aggression, threat-from people external to the
	 Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank
Shock, fright, violence, aggression,	robbery, assaulting bus drivers, etc.).
threat, presence	- Aggression, mobs, violence by animals
	 Aggression, mods, violence by animals Presence of the victim or a third party that creates in itself a
	 Presence of the victim of a third party that creates in itself a danger to the victim / for himself and if any other
	anison to the mental in misch and it ally utill
	- Another case involving surprise, fright, violence, aggression,

D	DIRECT CAUSE
Contact with electric current, temperature	 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot
	 Contact with object or cold or frozen Another case involving contact with electric current, temperature
Contact with other material or substance	 Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of
	particles - Another case involving contact with material or substance
Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (the result of a fall) Horizontal motion, crash on / against Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion)
Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping, cutching cutching circle involving nesting, trapping, cutching cutching
Physical or mental effort	 crushing, crushing, pinching, etc Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans

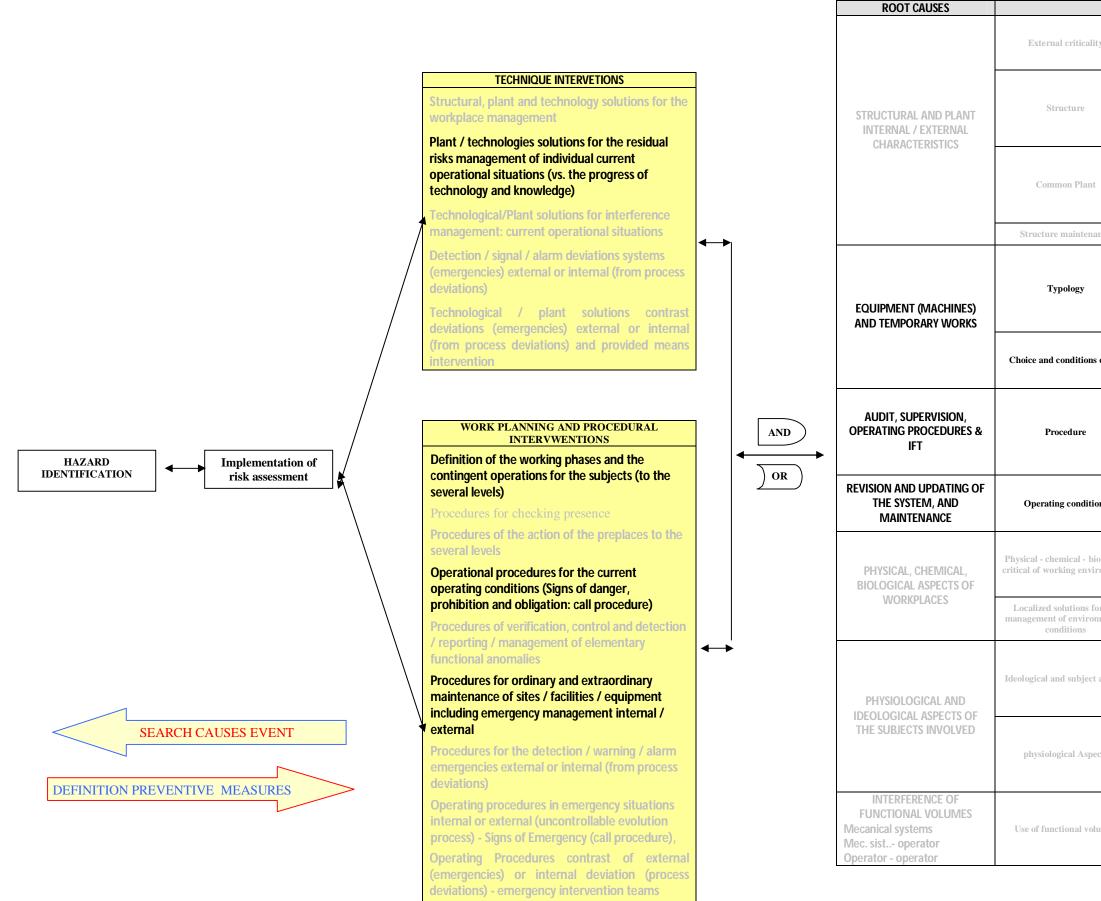
SEVERITY and TYPE OF INJURY (medical report data)

Death for head trauma

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 7500 Id (death)</i> Part of body injured: Total body and internal organs Type of injury: Death for closed fractures and internal injuries	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	NESTING, TRAPPING, CRUSHING, CRUSHING, PINCHING, ETC Constrict of whole body or of one or more parts of it – <i>linked to the crush of the worker</i> <i>between the protection bar and the strut of centering</i>	It is necessary a correct and maintenance of the control plant of the platform lift and a complete risk analysis and an adjustment of the equipments	7
2	DEVIATION DUE TO ELECTRICAL PROBLEMS, EXPLOSION, FIRE - Electrical problem caused by a plant failure -related to the anomaly of the function of the control plant of platform lift LOSS OF CONTROL (TOTAL OR PARTIAL) OF MACHINE, MEANS OF TRANSPORT OR HANDLING EQUIPMENT, HAND-HELD TOOL, OBJECT, ANIMAL - Problems of total or partial control of a means of transport / handling of people and / or animals – related to the uncoordinated movements of platform lift	It must need a risk analysis and consequently procedure and information, formation and training and a correct supervision of workers; or a suitable maintenance of the machine	6

3	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Typology - Works provisional (eg. scaffolding,) - linked to the platform lift used EQUIPMENT (MACHINES) AND TEMPORARY WORKS -Choice and conditions of use – How to use - linked to the use of the machine EQUIPMENT (MACHINES) AND TEMPORARY WORKS -Choice and conditions of use – Maintenance status – related to the maintenance status of platform lift EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Typology Devices (command and control, signaling, security) - related to the control plant of the platform lift AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Procedures for workers and supervisor - related to the procedures to be adopted AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Information, formation and Training - linked to the IFT that must be made on the procedures enacted REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE - Operating conditions - Verification functionality before to use – related to the check to do before of the use of quarterdeck	Evaluation of the choice of the solutions adopted	5
	AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - related to the workers procedures and the resulting IFT	AUDIT, SUPERVISION AND OPERATING PROCEDURES & IFT - information, training and operator training at various levels,	
4	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – related to the machine used in the processing	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – control plant and platform lift used during the processing	4
	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE - related to check to do before the use of the platform lift	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE control to do before the use of the machine	

5.1	A functional control plant of the platform lift	A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - a new platform lift to use	3
5.2	Risk analysis complete information, education and training Procedure of the worker Procedure of maintenance	 A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related to the working procedures for different workers B. Definition of the working phases and the contingent operations for the subjects (to the several levels) - (related the definition of working procedures); C. Procedures for ordinary and extraordinary maintenance of sites / facilities / equipment including emergency management internal / external - (related the definition of maintenance procedures); 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Realization of a correct and complete risk analysis with a consequently elaboration of procedure and information, formation and training of workers Maintenance of control plants of platform lift	1



	INDIRECT CAUSES OF SECOND LEVEL
cality	 General criticality [boundary conditions (eg. topography, climate, availability of services, sociological context)] Specific criticality (seismicity, area exposed to floods, avalanches,)
2	 General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,) Specific structural Aspects [eg. Structural safety equipment, escape routes (eg fire escape) and safe places] Consistency with the uses
ant	 General Plants [eg. distribution systems (production) of energy, management systems of the general environmental conditions (eg, heating, cooling, air exchange, lighting,), communication systems] Specific Pants (systems of emergency management, detection, contrast and alarm)
enance	- Conservation work
,	 Participation of adaptation to the norms Machine [tool, operator, auxiliary (eg. pollutant collection systems, cooling, heating,)] Work Equipment [instrumentation, equipment, localized systems of transport energy (eg. power cables,)] Machinery and transport equipment Devices (command and control, signaling, security) Works provisional (eg. scaffolding,)
ons of use	 Suitability to he development of specific operations in the context Installation How to use Maintenance status
2	 Audit ; Supervision; Procedures for workers; Procedures for machine operators; Procedures for personnel systems; Procedures for supervisors; Procedures for special operations personnel; Information, formation and Training
litions	Test Verification functionality before to use Types of maintenance applied Revision Updating systems
- biological nvironment	 Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological genets (eg viruse bacteria)
ns for the ironmental S	 Environmental treatment (eg. thermal insulation, acoustic,) Lighting Massing available
ect aspects	 Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment
spects	 Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity)
volumes	Vehicles / machinery / plant / equipment in motion, controlled by operator Vehicles / machinery / plant / equipment, automated motion (controlled by PLC) Workers on the move

	DIRECT CAUSES OF FIRST LEVEL
	- Electrical problem caused by a plant failure
	 Electrical problem caused by static electricity Electrical problem caused by missing insulation
Deviation due to electrical	 Electrical problem caused by missing institution Electrical problem caused by external radiation / lightning
problems, explosion, fire	 Explosion
	- Fire
	- Another case relating to electrical problems, explosion, fire
	- Solid state - overflowing, overturning
	- Liquid state - leaking, oozing, flowing, splashing, spraying
overflow, overturn, leak, flow,	- Gaseous state - vaporisation, aerosol formation, gas formation
vaporisation, emission	- Pulverulent material - smoke generation, dust/particles in
	suspension/emission of - Another case relating to overflow, overturn, leak, flow,
	- Another case relating to overnow, overturn, leak, now, vaporisation, emission
	- Break of material, at junctions, connections, material agent
Breakage, bursting, splitting,	- Break / release of personal protective equipment
slipping, fall, collapse of Material	- Break with explosion of splinters (wood, glass, metal, stone,
Agent	plastic, etc.) agent material
	- Another case involving rupture, fracture, rupture violent,
	sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
	 above (which falls on the victim) Sliding, fall, loss of stability, collapse of agent material placed
Slipping, falling, loss of stability,	below (which drags the victim)
collapse agent material	- Slip, fall, loss of stability, the collapse of a material agent - at
	the same level
	- Another case relating to slipping, falling, loss of stability,
	collapse agent material
	- Problems of total or partial control of the machine (including
	the unintended equipment) as well as the processed material
	- Problems of total or partial control of the means of transport /
	equipment material handling and / or substance (motorized or not)
I f (4-4-1	- Problems of total or partial control of a means of transport /
Loss of control (total or partial) of machine, means of transport or	handling of people and / or animals
handling equipment, hand-held	 Problems of total or partial control of hand tool (motorized or
tool, object, animal	not) as well as the material machined by
	- Problems of total or partial control of object (led, moved,
	moved, etc.).
	- Problems of total or partial control of animal
	- Another cause of problems related to total or partial control of
	machinery, transportation / handling equipment, hand tools or
	 objects, animals Fall of person from the top through the opening
	 Fail of person from the top through the opening Slipping or tripping - with the fall of man - from
	 Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level
Slipping - Stumbling and falling -	 Loss of balance - with the fall of man - from
Fall of persons	- Loss of balance - with the fall of person - at the same level
	- Slipping or tripping on machinery
	- Another case involving slipping or tripping, loss of balance -
	with the fall of person
	- Walking on a sharp object
	- Kneel, sit, lean against
Body movement without any	- Being grabbed, dragged, or moved by something from their
physical stress	- momentum - Uncoordinated movements, gestures, inopportune,
	inappropriate
	- Another cause relative movement of the body without physical
	exertion (which usually leads to an external injury)
	- Lifting, carrying or standing
	- Pushing, pulling, pulling
Body movement under or with	- Depositing, dropping
physical stress	- Twisting, turning, turning
	- Step false twisting of the leg or ankle, slipping without falling
	- Another cause relative movement of the body during physical
	exertion (which usually leads to an internal injury)
	 Surprise, fear Violence, aggression, threat - including employees of the
	- Violence, aggression, threat - including employees of the - Violence, aggression, threat-from people external to the
	company to the victims in the context of their function (bank
Shock, fright, violence, aggression,	robbery, assaulting bus drivers, etc.).
threat, presence	- Aggression, mobs, violence by animals
	- Presence of the victim or a third party that creates in itself a
	danger to the victim / for himself and if any other
	- Another case involving surprise, fright, violence, aggression,

L	DIRECT CAUSE
Contact with electric current, temperature	 Indirect contact with the electrical circulightning (passive) Direct contact with electricity, suffer electric discharge in the body Contact with flame or object / warm or rehot Contact with object or cold or frozen Another case involving contact with elect current, temperature
Contact with other material or substance	 Contact with hazardous substances in nasal, oral, inhalation Contact with hazardous substances throut the skin or eyes Contact with hazardous substances throut the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension particles Another case involving contact with mater or substance
Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (result of a fall) Horizontal motion, crash on / against Another case involving crushing vertiand / or horizontal moving, fall on / agaian immovable object / ground (victim motion)
Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motidisplacement, including vehicles Collision with a moving object, includivehicles - a collision with a person (within is moving) Another case involving a collision by movid object, collision with
contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knii blade) Contact with a sharp Material Agent (na sharp tool) Contact agent with hard or abras material Another case concerning materials contact with agent edgy, sharp, ha abrasive
Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand finger or more parts of the body Constrict of whole body or of one or me parts of it By pinching Another case involving nesting, trappi crushing, crushing, pinching, etc
Physical or mental effort	 Physical effort at the expense of musculoskeletal system Physical exertion caused by radiation, noi light, pressure Effort psychic, mental shock Another case involving mental or physi effort
Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., animals or humans

AND

OR

SEVERITY and TYPE OF INJURY (medical report data)

Death for closed fractures and internal injuries

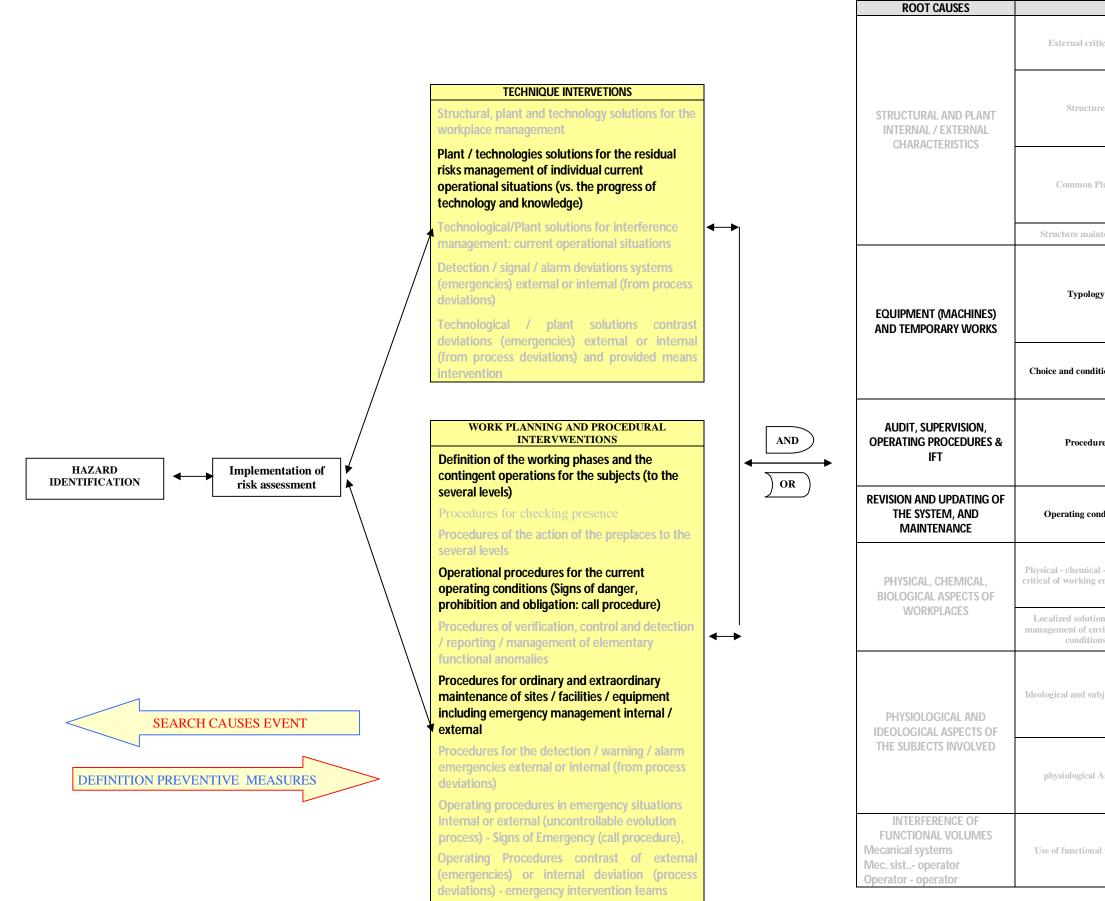
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	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	ED: 7500 Id (death) Part of body injured: Total body and internal organs Type of injury: Death for closed fractures and internal injuries	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	CRUSHING VERTICALLY AND / OR HORIZONTALLY MOVING, FALL ON / AGAINST AN IMMOVABLE OBJECT / GROUND (VICTIM IN MOTION) - Vertical motion, crash on / against (the result of a fall) – linked to the crush of the worker to the ground under the movable bridge	It is necessary a to use an equipment suitable to the activity	7
2	SLIPPING, FALLING, LOSS OF STABILITY, COLLAPSE AGENT MATERIAL - Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim) -related to the overturning of the movable bridge LOSS OF CONTROL (TOTAL OR PARTIAL) OF MACHINE, MEANS OF TRANSPORT OR HANDLING EQUIPMENT, HAND-HELD TOOL, OBJECT, ANIMAL - Problems of total or partial control of a means of transport / handling of people and / or animals – related to the movements of the equipment	It must need an equipment suitable and consequently procedure and information, formation and training and a correct supervision of workers	6

3	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Typology - Works provisional (eg. scaffolding,) - linked to the movable bridge used EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Choice and conditions of use – How to use - linked to the use of the equipment EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Typology Devices (command and control, signaling, security) - related to the control plant of the movable bridge AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Procedures for workers and supervisor - related to the procedures to be adopted AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Information, formation and Training - linked to the IFT that must be made on the procedures enacted REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE - Operating conditions - Verification functionality before to use – related to the check to do before of the use of the movable brisge	Evaluation of the choice of the solutions adopted	5
	AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - related to the workers procedures and the resulting IFT	AUDIT, SUPERVISION AND OPERATING PROCEDURES & IFT - information, training and operator training at various levels,	
4	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – related to the machine used in the processing	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – control plant or movable bridge used during the processing	4
	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE - related to check to do before the use of the platform lift	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE control to do before the use of the machine	

5.1	A suitable movable bridge for the processing	A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - a new movable bridge to use	3
5.2	information, education and training Procedure of the worker for the use of movable bridge Procedure of maintenance	 A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related to the working procedures for different workers B. Definition of the working phases and the contingent operations for the subjects (to the several levels) - (related the definition of working procedures); C. Procedures for ordinary and extraordinary maintenance of sites / facilities / equipment including emergency management internal / external - (related the definition of maintenance procedures); 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Use of a suitable movable bridge for the processing	1



	INDIRECT CAUSES OF SECOND LEVEL
	- General criticality [boundary conditions (eg.
iticality	topography, climate, availability of services, sociological context)]
	- Specific criticality (seismicity, area exposed to
	floods, avalanches,) - General structural aspects (eg. general and local
	stability, allowable loads, materials, quality,
ure	efficiency,)
ure	- Specific structural Aspects [eg. Structural safety equipment, escape routes (eg fire escape) and
	safe places]
	Consistency with the uses General Plants [eg. distribution systems]
	(production) of energy, management systems of
Plant	the general environmental conditions (eg, heating, cooling, air exchange, lighting,),
	communication systems]
	- Specific Pants (systems of emergency
	- Conservation work
intenance	- Participation of adaptation to the norms
	 Machine [tool, operator, auxiliary (eg. pollutant collection systems, cooling, heating,)]
	- Work Equipment [instrumentation, equipment,
ogy	localized systems of transport energy (eg. power cables,)]
ugy	- Machinery and transport equipment
	- Devices (command and control, signaling,
	security) - Works provisional (eg. scaffolding,)
	- Suitability to he development of specific
litions of use	operations in the context - Installation
intions of use	- How to use
	- Maintenance status
	- Audit ; - Supervision;
	 Procedures for workers;
ure	 Procedures for machine operators; Procedures for personnel systems;
	 Procedures for supervisors;
	 Procedures for special operations personnel; Information, formation and Training
	- Test
	- Verification functionality before to use
onditions	 Types of maintenance applied Revision
	- Updating systems
	 Raw materials and process products Products resulting from process deviations
al - biological	 Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous)
g environment	- Physical pollutants (eg noise, vibration,
	 electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,)
ions for the	- Environmental treatment (eg. thermal insulation,
nvironmental	acoustic,) - Lighting
ons	- Massing available
	- Behaviour (available to any person to produce
	answers, determined from the environment, family regarding social situations, groups, and
ubject aspects	objects)
- 1 ·	- Position in relation to the duty cycle and the number of shifts
	- Relationships with supervisors and subordinates
	Contract / employment Age
	- Work Experience
1 A spects	- Conditions of health Psycho.physical_state_(agdepressedsleepy
l Aspects	 Psycho-physical state (eg, depressed, sleepy, drunk, drugged,)
	- Attitude (predisposition for a particular mental
	or physical activity)
	Vehicles / machinery / plant / equipment in
nal volumes	motion, controlled by operator Vehicles / machinery / plant / equipment,
iai votuilles	automated motion (controlled by PLC)
	Workers on the move

	NDIRECT CAUSES OF FIRST LEVEL
Deviation due to electrical problems, explosion, fire	 Electrical problem caused by a plant failure Electrical problem caused by static electricity Electrical problem caused by missing insulation Electrical problem caused by external radiation / lightning Explosion Fire
	- Another case relating to electrical problems, explosion, fire
overflow, overturn, leak, flow, vaporisation, emission	 Solid state - overflowing, overturning Liquid state - leaking, oozing, flowing, splashing, spraying Gaseous state - vaporisation, aerosol formation, gas formation Pulverulent material - smoke generation, dust/particles in suspension/emission of Another case relating to overflow, overturn, leak, flow vaporisation, emission
Breakage, bursting, splitting, slipping, fall, collapse of Material	 Break of material, at junctions, connections, material agent Break / release of personal protective equipment Break with explosion of splinters (wood, glass, metal, stone)
Agent	 plastic, etc.) agent material Another case involving rupture, fracture, rupture violent sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
Slipping, falling, loss of stability, collapse agent material	 above (which falls on the victim) Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim) Slip, fall, loss of stability, the collapse of a material agent - a the same level Another case relating to slipping, falling, loss of stability collapse agent material Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material Problems of total or partial control of the means of transport equipment material handling and / or substance (motorized o not)
Loss of control (total or partial) of machine, means of transport or handling equipment, hand-held tool, object, animal	 Problems of total or partial control of a means of transport handling of people and / or animals Problems of total or partial control of hand tool (motorized o not) as well as the material machined by Problems of total or partial control of object (led, moved moved, etc.). Problems of total or partial control of animal Another cause of problems related to total or partial control o machinery, transportation / handling equipment, hand tools o objects, animals
Slipping - Stumbling and falling - Fall of persons	 Fall of person from the top through the opening Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level Loss of balance - with the fall of man - from Loss of balance - with the fall of person - at the same level Slipping or tripping on machinery Another case involving slipping or tripping, loss of balance with the fall of person
Body movement without any physical stress	 Walking on a sharp object Kneel, sit, lean against Being grabbed, dragged, or moved by something from thei momentum Uncoordinated movements, gestures, inopportune inappropriate Another cause relative movement of the body without physica exertion (which usually leads to an external injury)
Body movement under or with physical stress	 Lifting, carrying or standing Pushing, pulling, pulling Depositing, dropping Twisting, turning, turning Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physica exertion (which usually leads to an internal injury)
Shock, fright, violence, aggression, threat, presence	 Surprise, fear Violence, aggression, threat - including employees of the Violence, aggression, threat-from people external to the company to the victims in the context of their function (banl robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals Presence of the victim or a third party that creates in itself a danger to the victim / for himself and if any other Another case involving surprise, fright, violence, aggression threat, presence

	DIRECT CAUSE
	- Indirect contact with the electrical circuit
	lightning (passive)
	- Direct contact with electricity, suffer a
Contact with electric current,	electric discharge in the body
temperature	- Contact with flame or object / warm or red
	hot
	- Contact with object or cold or frozen
	- Another case involving contact with electr
	current, temperature
	- Contact with hazardous substances for
	nasal, oral, inhalation
	- Contact with hazardous substances throug
	the skin or eyes
	- Contact with hazardous substances throug
Contact with other material or substance	the digestive system, swallowing or eating
	 Drowning in a liquid Burial under a solid
	- Immersion in a gas, in a suspension of particles
	 Another case involving contact with materia
	or substance
	- Vertical motion, crash on / against (th
	- vertical motion, crash on 7 against (in result of a fall)
Crushing vertically and / or	- Horizontal motion, crash on / against
horizontally moving, fall on / against	- Another case involving crushing vertice
an immovable object / ground	and / or horizontal moving, fall on / again
(victim in motion)	an immovable object / ground (victim i
	motion)
	- Struck by object projected
	- Struck by falling object
	- Struck by object that oscillates
	- Struck by object in rotation, motion
Struck by moving object, collisions	displacement, including vehicles
	- Collision with a moving object, including
	vehicles - a collision with a person (th
	victim is moving)
	- Another case involving a collision by movir
	object, collision with
	- Contact with a sharp Material Agent (knife
	blade)
	- Contact with a sharp Material Agent (nail
contact with sharp material agent,	sharp tool)
pointed, hard, abrasive	- Contact agent with hard or abrasiv
Former of the state of the stat	material
	- Another case concerning materials i
	contact with agent edgy, sharp, har
	abrasive
	 Nesting, trapping, crushing in / inside
	- Nesting, trapping, crushing under
	- Nesting, trapping, crushing between
Necting transing anyching	- Tearing, cutting of a member, a hand, finger or more parts of the body
Nesting, trapping, crushing, crushing, pinching, etc	 finger or more parts of the body Constrict of whole body or of one or more
	- Constrict of whole body or of one or mole parts of it
	- By pinching
	- Another case involving nesting, trappin
	crushing, crushing, pinching, etc
	- Physical effort at the expense of the
	- Physical effort at the expense of the musculoskeletal system
	- Physical exertion caused by radiation, nois
Physical or mental effort	- Invision exercise by radiation, hors
a mysicar or inclital citore	 Effort psychic, mental shock
	 Another case involving mental or physic
	effort
	- Bite
	- Bite - Puncture by insects or fish
Bite, calcium, etc., by animals or	- Puncture by insects or fish
Bite, calcium, etc., by animals or humans	

AND

SEVERITY and TYPE OF INJURY (medical report data)

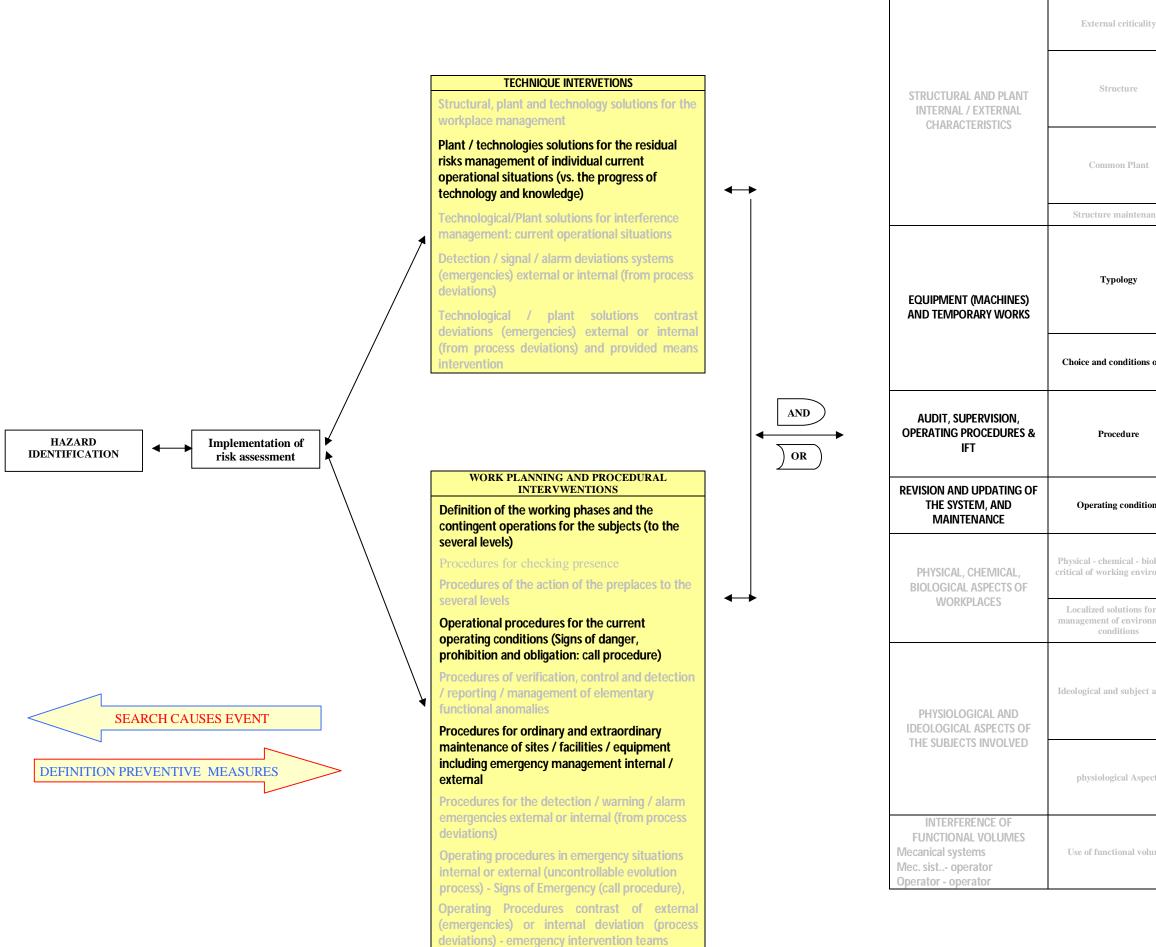
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Death for closed fractures and internal injuries

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	ED: 7500 Id (death) Part of body injured: Chest area including organs Type of injury: Death for closed fractures and internal injuries	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	NESTING, TRAPPING, CRUSHING, CRUSHING, PINCHING, ETC - Nesting, trapping, crushing under – <i>linked to the crush of the worker by the truck</i>	It is necessary a to use an equipment suitable to the activity	7
2	BREAKAGE, BURSTING, SPLITTING, SLIPPING, FALL, COLLAPSE OF MATERIAL AGENT - Break of material, at junctions, connections, material agent - related to the break of the steering of the truck LOSS OF CONTROL (TOTAL OR PARTIAL) OF MACHINE, MEANS OF TRANSPORT OR HANDLING EQUIPMENT, HAND-HELD TOOL, OBJECT, ANIMAL - Problems of total or partial control of a means of transport / handling of people and / or animals – related to the control of the truck during the drive SLIPPING - STUMBLING AND FALLING - FALL OF PERSONS - Fall of person from the top through the opening – related to the exit of the worker from the truck throught the window	It must need an equipment suitable and consequently procedure and information, formation and training and a correct supervision of workers	6

	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Typology - Machinery and transport equipment - linked to the truck used EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Choice and conditions of use – How to use - linked to the use of the truck AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure -		
3	Procedures for workers and supervisor - related to the procedures to be adopted	Evaluation of the choice of the solutions adopted	5
	AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - Procedure - Information, formation and Training - linked to the IFT that must be made on the procedures enacted REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE - Operating conditions - Verification functionality before to use – related to the check to do before of the use of the truck		
	AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - related to the workers procedures and the resulting IFT	AUDIT, SUPERVISION AND OPERATING PROCEDURES & IFT - information, training and operator training at various levels,	
4	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – related to the transport used in the processing	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – control plant or movable bridge used during the processing	4
	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE - related to check to do before the use of the truck	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE control to do before the use of the machine	

5.1	A truck kept under maintenance	A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - a new truck to use	3
5.2	information, education and training Procedure of the worker for the use of the truck Procedure of maintenance	 A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related to the working procedures for different workers B. Definition of the working phases and the contingent operations for the subjects (to the several levels) - (related the definition of working procedures); C. Procedures for ordinary and extraordinary maintenance of sites / facilities / equipment including emergency management internal / external - (related the definition of maintenance procedures); 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Correct maintenance of the truck and application of technical solutions on the truck	1



	INDIRECT CAUSES OF SECOND LEVEL
	- General criticality [boundary conditions (eg.
87	topography, climate, availability of services,
Y	 sociological context)] Specific criticality (seismicity, area exposed to floods, avalanches,)
	- General structural aspects (eg. general and
	local stability, allowable loads, materials, quality, efficiency,)
	- Specific structural Aspects [eg. Structural
	safety equipment, escape routes (eg fire escape) and safe places]
	Consistency with the uses General Plants [eg. distribution systems
	(production) of energy, management systems of the general environmental conditions (eg,
	heating, cooling, air exchange, lighting,),
	communication systems] - Specific Pants (systems of emergency
	management, detection, contrast and alarm)
nce	 Conservation work Participation of adaptation to the norms
	 Machine [tool, operator, auxiliary (eg. pollutant collection systems, cooling, heating,
	····)]
	- Work Equipment [instrumentation, equipment, localized systems of transport
	energy (eg. power cables,)]
	 Machinery and transport equipment Devices (command and control, signaling,
	security)
	 Works provisional (eg. scaffolding,) Suitability to he development of specific
- f	operations in the context Installation
of use	- How to use
	Maintenance status Audit :
	- Audit ; - Supervision;
	 Procedures for workers; Procedures for machine operators;
	- Procedures for personnel systems;
	 Procedures for supervisors; Procedures for special operations personnel;
	- Information, formation and Training
	 Test Verification functionality before to use
ns	- Types of maintenance applied Revision
	- Updating systems
	Raw materials and process products Products resulting from process deviations
ological	- Chemical pollutants (solid, liquid, gaseous)
onment	- Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,)
	- Biological agents (eg, viruses, bacteria,)
r the	- Environmental treatment (eg. thermal
	insulation, acoustic,)
mental	insulation, acoustic,) - Lighting
mental	insulation, acoustic,) - Lighting - Massing available - Behaviour (available to any person to produce
mental	insulation, acoustic,) - Lighting - Massing available - Behaviour (available to any person to produce answers, determined from the environment,
	 insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects)
aspects	insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and
	 insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and
	 insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts
	 insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age
aspects	 insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age Work Experience Conditions of health
aspects	 insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates <u>Contract / employment</u> Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy,
aspects	 insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular
aspects	 insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,)
	 insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates <u>Contract / employment</u> Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity) Vehicles / machinery / plant / equipment in
aspects	 insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity)
aspects	 insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity) Vehicles / machinery / plant / equipment in motion, controlled by operator Vehicles / machinery / plant / equipment, automated motion (controlled by PLC)
aspects	 insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity) Vehicles / machinery / plant / equipment in motion, controlled by operator Vehicles / machinery / plant / equipment,

OR

IN	DIRECT CAUSES OF FIRST LEVEL
Deviation due to electrical problems, explosion, fire	 Electrical problem caused by a plant failure Electrical problem caused by static electricity Electrical problem caused by missing insulation Electrical problem caused by external radiation / lightning Explosion Fire Another case relating to electrical problems, explosion, fire
overflow, overturn, leak, flow, vaporisation, emission	 Solid state - overflowing, overturning Liquid state - leaking, oozing, flowing, splashing, spraying Gaseous state - vaporisation, aerosol formation, gas formation Pulverulent material - smoke generation, dust/particles in suspension/emission of Another case relating to overflow, overturn, leak, flow, vaporisation, emission
Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	 Break of material, at junctions, connections, material agent Break / release of personal protective equipment Break with explosion of splinters (wood, glass, metal, stone, plastic, etc.) agent material Another case involving rupture, fracture, rupture violent, sudden and loud agent material
Slipping, falling, loss of stability, collapse agent material	 Slip, fall, loss of stability, collapse of Material Agent placed above (which falls on the victim) Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim) Slip, fall, loss of stability, the collapse of a material agent - at the same level Another case relating to slipping, falling, loss of stability, collapse agent material
Loss of control (total or partial) of machine, means of transport or handling equipment, hand-held tool, object, animal	 Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material Problems of total or partial control of the means of transport / equipment material handling and / or substance (motorized or not) Problems of total or partial control of a means of transport / handling of people and / or animals Problems of total or partial control of hand tool (motorized or not) as well as the material machined by Problems of total or partial control of of bigect (led, moved, moved, etc.). Problems of total or partial control of animal Another cause of problems related to total or partial control of machinery, transportation / handling equipment, hand tools or objects, animals
Slipping - Stumbling and falling - Fall of persons	 Fall of person from the top through the opening Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level Loss of balance - with the fall of man - from Loss of balance - with the fall of person - at the same level Slipping or tripping on machinery Another case involving slipping or tripping, loss of balance - with the fall of person
Body movement without any physical stress	 Walking on a sharp object Kneel, sit, lean against Being grabbed, dragged, or moved by something from their momentum Uncoordinated movements, gestures, inopportune, inappropriate Another cause relative movement of the body without physical exertion (which usually leads to an external injury)
Body movement under or with physical stress	 Lifting, carrying or standing Pushing, pulling, pulling Depositing, dropping Twisting, turning, turning Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physical exertion (which usually leads to an internal injury)
Shock, fright, violence, aggression, threat, presence	 Surprise, fear Violence, aggression, threat - including employees of the Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals Presence of the victim or a third party that creates in itself a danger to the victim / for himself and if any other Another case involving surprise, fright, violence, aggression, threat, presence

		DIRECT CAUSE
		- Indirect contact with the electrical circuit,
		lightning (passive)
		- Direct contact with electricity, suffer an
	Contact with electric current,	electric discharge in the body
	temperature	- Contact with flame or object / warm or red-
		 hot Contact with object or cold or frozen
		 Contact with object or cold or frozen Another case involving contact with electric
		- Another case involving contact with electric current, temperature
		- Contact with hazardous substances for
		nasal. oral. inhalation
		- Contact with hazardous substances through
		the skin or eyes
		- Contact with hazardous substances through
	Contact with other material or	the digestive system, swallowing or eating
	substance	- Drowning in a liquid
		- Burial under a solid
		- Immersion in a gas, in a suspension of
		particles
		- Another case involving contact with material
		or substance
		- Vertical motion, crash on / against (the
	Crushing vertically and / or	result of a fall)
	horizontally moving, fall on / against	- Horizontal motion, crash on / against
	an immovable object / ground	- Another case involving crushing vertical
	(victim in motion)	and / or horizontal moving, fall on / against
		an immovable object / ground (victim in
		motion)
		- Struck by object projected
		- Struck by falling object
		 Struck by object that oscillates Struck by object in rotation, motion,
	Struck by moving object, collisions	- Struck by object in rotation, motion, displacement, including vehicles
	with	- Collision with a moving object, including
	WILLI	vehicles - a collision with a person (the
		victim is moving)
		- Another case involving a collision by moving
VD)		object, collision with
		- Contact with a sharp Material Agent (knife /
		blade)
		- Contact with a sharp Material Agent (nail /
	contact with sharp material agent,	sharp tool)
	pointed, hard, abrasive	- Contact agent with hard or abrasive
	pointed, int d, dordor o	material
		- Another case concerning materials in
		contact with agent edgy, sharp, hard,
		abrasive
		 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under
		 Nesting, trapping, crushing under Nesting, trapping, crushing between
		- Tearing, cutting of a member, a hand, a
	Nesting, trapping, crushing,	finger or more parts of the body
	crushing, pinching, etc	- Constrict of whole body or of one or more
	crussing, principal, etc.	parts of it
		- By pinching
		- Another case involving nesting, trapping,
		crushing, crushing, pinching, etc
		- Physical effort at the expense of the
		musculoskeletal system
		- Physical exertion caused by radiation, noise,
	Physical or mental effort	light, pressure
	-	- Effort psychic, mental shock
		- Another case involving mental or physical
		effort
		- Bite
	Dife entries of the table	- Puncture by insects or fish
	Bite, calcium, etc., by animals or	- Shot, football, head, strangulation
	humans	- Another case relating to bite, kick, etc., by
		- mounter case relating to bitty meny etch by



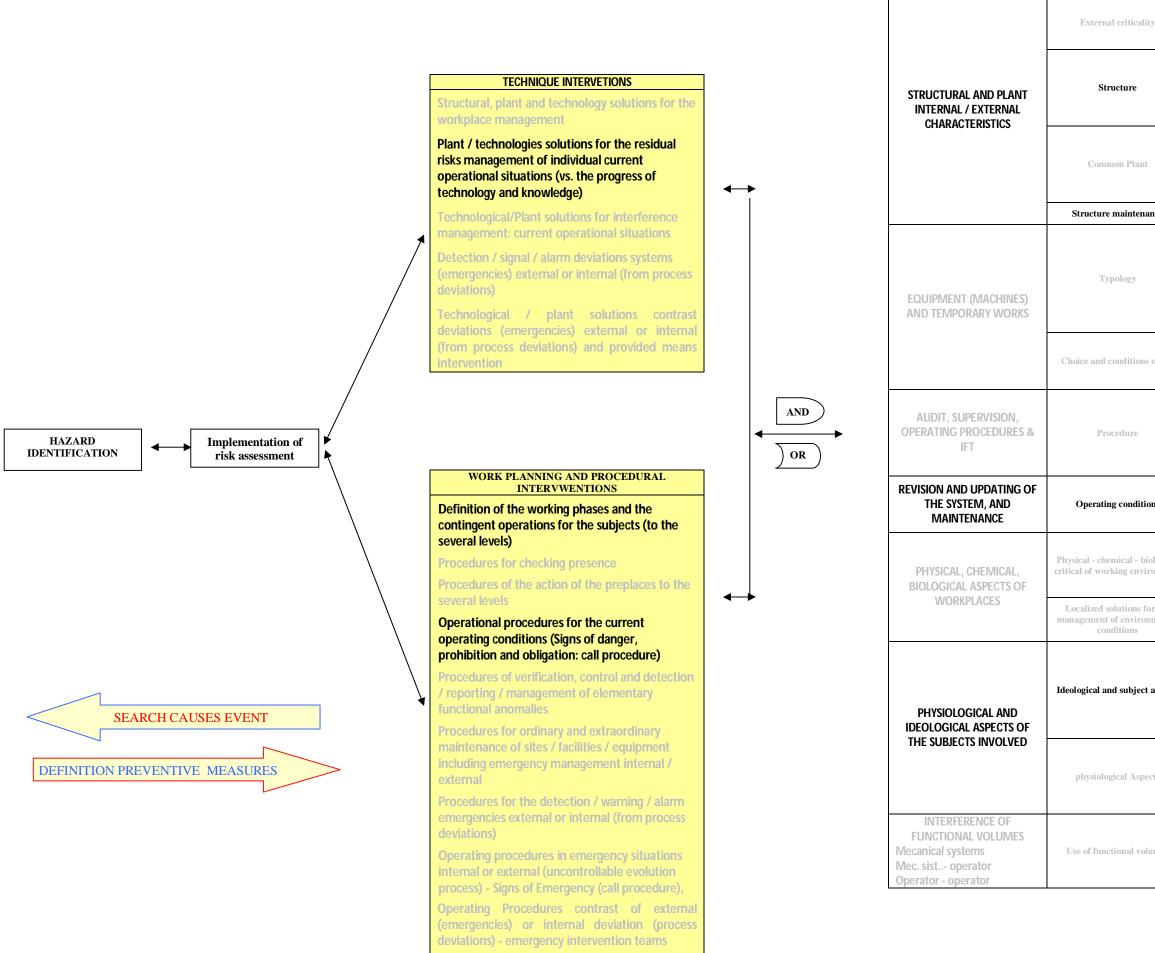
SEVERITY and TYPE OF INJURY (medical report data)

Death for closed fractures and internal injuries

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 20 Id</i> Part of body injured: left hand and Pelvic area Type of injury: Superficial lesion	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	CRUSHING VERTICALLY AND / OR HORIZONTALLY MOVING, FALL ON / AGAINST AN IMMOVABLE OBJECT / GROUND (VICTIM IN MOTION) - Vertical motion, crash on / against (the result of a fall) – linked to the worker fall to the stair of the ladle furnace	It is necessary to use an equipment suitable to the activity(ladder with non-slip grating and handrail)	7
2	SLIPPING, FALLING, LOSS OF STABILITY, COLLAPSE AGENT MATERIAL - Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim) -related to the plane of the staircase slippery SLIPPING - STUMBLING AND FALLING - FALL OF PERSONS - Another case involving slipping or tripping, loss of balance - with the fall of person – related to the loss of balance of the worker	It must need an equipment suitable and consequently equipment and a consequently procedure and information, formation and training and a correct supervision of workers	6

3	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - Structure - General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,)- linked to the slippery and dirty floor STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - Structure Maintenance- Conservation work - linked to the stairs maintenance PHYSIOLOGICAL AND IDEOLOGICAL ASPECTS OF THE SUBJECTS INVOLVED - Ideological and subject aspects - Position in relation to the duty cycle and the number of shifts –linked to the not completely activities did by the worker REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE - Operating conditions - Verification functionality before to use – related to the check to do before of the use of the stairs	Evaluation of the choice of the solutions adopted	5
4	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - related to the floor in the area of activity and state of the stairs PHYSIOLOGICAL AND IDEOLOGICAL ASPECTS OF THE SUBJECTS INVOLVED – related to the behaviour of worker during the activity REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE - related to check to do before the use of the stairs	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - cleanliness of the work environment and introduction of a scale in accordance with the law PHYSIOLOGICAL AND IDEOLOGICAL ASPECTS OF THE SUBJECTS INVOLVED –update the training of the worker and control the orderly conduct of the cycle REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE control to do before the use of the equipment	4

5.1	A stairs kept under maintenance	A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - a ladder with non-slip grating and handrail to use	3
5.2	information, education and training Procedure of the worker for the use of the stairs Procedure of maintenance	 A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related to the working procedures for different workers B. Definition of the working phases and the contingent operations for the subjects (to the several levels) - (related the definition of working procedures); 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Correct choice of a suitable equipment for the conduct of activity	1



	INDIRECT CAUSES OF SECOND LEVEL
	- General criticality [boundary conditions (eg.
	topography, climate, availability of services,
У	sociological context)] - Specific criticality (seismicity, area exposed to
	floods, avalanches,)
	 General structural aspects (eg. general and local stability allowable loads matarials
	local stability, allowable loads, materials, quality, efficiency,)
	- Specific structural Aspects [eg. Structural
	safety equipment, escape routes (eg fire escape) and safe places]
	- Consistency with the uses
	- General Plants [eg. distribution systems (production) of energy, management systems
	of the general environmental conditions (eg,
	heating, cooling, air exchange, lighting,), communication systems]
	- Specific Pants (systems of emergency
	management, detection, contrast and alarm)
nce	Conservation work Participation of adaptation to the norms
	- Machine [tool, operator, auxiliary (eg.
	pollutant collection systems, cooling, heating,)]
	- Work Equipment [instrumentation,
	equipment, localized systems of transport
	energy (eg. power cables,)] - Machinery and transport equipment
	- Devices (command and control, signaling,
	security) - Works provisional (eg. scaffolding,)
	- Suitability to he development of specific
of use	operations in the context - Installation
or dot	- How to use
	- Maintenance status
	- Audit ; - Supervision;
	- Procedures for workers;
	 Procedures for machine operators; Procedures for personnel systems;
	- Procedures for supervisors;
	 Procedures for special operations personnel; Information, formation and Training
	- Test
ns	 Verification functionality before to use Types of maintenance applied
	- Revision
	- Updating systems
	 Raw materials and process products Products resulting from process deviations
ological	- Chemical pollutants (solid, liquid, gaseous)
onment	- Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,)
	- Biological agents (eg, viruses, bacteria,)
or the	 Environmental treatment (eg. thermal insulation, acoustic,)
mental	- Lighting
	Massing available Behaviour (available to any person to produce
	answers, determined from the environment,
	family regarding social situations, groups, and objects)
aspects	- Position in relation to the duty cycle and the
	number of shifts
	- Relationships with supervisors and subordinates
	- Contract / employment
	- Age - Work Experience
	- Conditions of health
cts	 Psycho-physical state (eg, depressed, sleepy, drunk, drugged,)
	- Attitude (predisposition for a particular
	mental or physical activity)
	Vehicles / machinery / plant / equipment in
imes	motion, controlled by operator Vehicles / machinery / plant / equipment,
	automated motion (controlled by PLC)
	Workers on the move

OR

IN	DIRECT CAUSES OF FIRST LEVEL
	 Electrical problem caused by a plant failure Electrical problem caused by static electricity
Deviation due to electrical	- Electrical problem caused by missing insulation
problems, explosion, fire	- Electrical problem caused by external radiation / lightning
	- Explosion
	 Fire Another case relating to electrical problems, explosion, fire
	 Solid state - overflowing, overturning
	- Liquid state - leaking, oozing, flowing, splashing, spraying
overflow, overturn, leak, flow,	- Gaseous state - vaporisation, aerosol formation, gas formation
vaporisation, emission	- Pulverulent material - smoke generation, dust/particles in
	suspension/emission of - Another case relating to overflow, overturn, leak, flow,
	vaporisation, emission
	- Break of material, at junctions, connections, material agent
Breakage, bursting, splitting,	- Break / release of personal protective equipment
slipping, fall, collapse of Material	 Break with explosion of splinters (wood, glass, metal, stone, plastic, etc.) agent material
Agent	- Another case involving rupture, fracture, rupture violent.
	sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
	above (which falls on the victim) Sliding fall loss of stability, collenge of egent material placed
Slipping, falling, loss of stability,	 Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim)
collapse agent material	- Slip, fall, loss of stability, the collapse of a material agent - at
	the same level
	 Another case relating to slipping, falling, loss of stability, collarse agent meterial
	collapse agent material - Problems of total or partial control of the machine (including
	the unintended equipment) as well as the processed material
	- Problems of total or partial control of the means of transport /
	equipment material handling and / or substance (motorized or
	not) - Problems of total or partial control of a means of transport /
Loss of control (total or partial) of machine, means of transport or	 Problems of total or partial control of a means of transport / handling of people and / or animals
	 Problems of total or partial control of hand tool (motorized or
tool, object, animal	not) as well as the material machined by
	- Problems of total or partial control of object (led, moved,
	moved, etc.). - Problems of total or partial control of animal
	 Another cause of problems related to total or partial control of
	machinery, transportation / handling equipment, hand tools or
	objects, animals
	 Fall of person from the top through the opening Slipping or tripping - with the fall of man - from
	 Slipping or tripping - with the fall of person - at the same level
Slipping - Stumbling and falling -	- Loss of balance - with the fall of man - from
Fall of persons	- Loss of balance - with the fall of person - at the same level
	 Slipping or tripping on machinery Another case involving slipping or tripping, loss of balance -
	 Another case involving slipping or tripping, loss of balance - with the fall of person
	- Walking on a sharp object
	- Kneel, sit, lean against
	- Being grabbed, dragged, or moved by something from their
physical stress	momentum - Uncoordinated movements, gestures, inopportune.
	inappropriate
	- Another cause relative movement of the body without physical
	exertion (which usually leads to an external injury)
	- Lifting, carrying or standing
	 Pushing, pulling, pulling Depositing, dropping
	- Depositing, dropping - Twisting, turning, turning
	- Step false twisting of the leg or ankle, slipping without falling
	- Another cause relative movement of the body during physical
	exertion (which usually leads to an internal injury)
	 Surprise, fear Violence, aggression, threat - including employees of the
	- Violence, aggression, threat-from people external to the
Shoely fright rislance	company to the victims in the context of their function (bank
Shock, fright, violence, aggression, threat, presence	robbery, assaulting bus drivers, etc.).
	- Aggression, mobs, violence by animals
	 Presence of the victim or a third party that creates in itself a danger to the victim / for himself and if any other
	- Another case involving surprise, fright, violence, aggression,
	G I ***/ G // * * * / ***/ *************

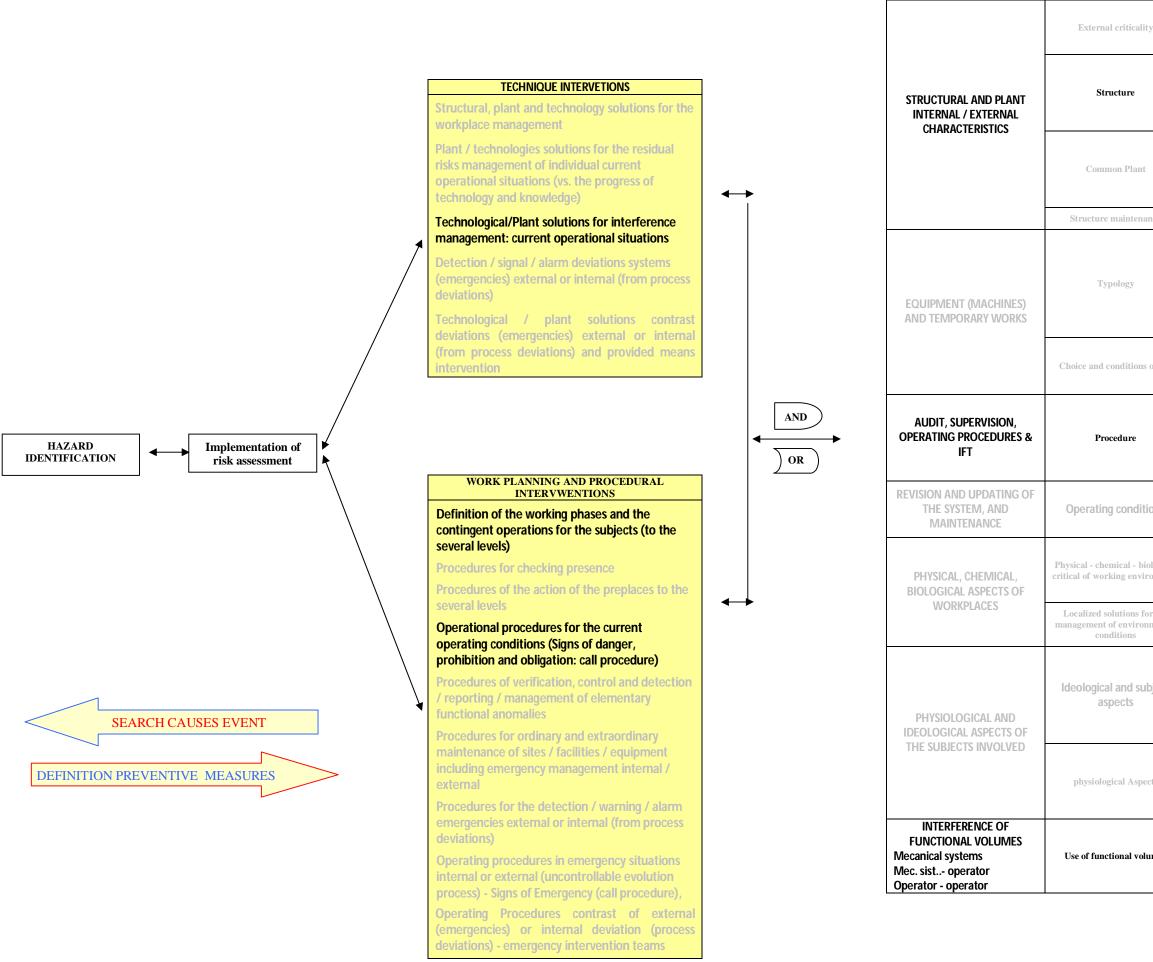
	D	IRECT CAUSE
		 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an
	Contact with electric current, temperature	electric discharge in the body - Contact with flame or object / warm or red-
		 hot Contact with object or cold or frozen Another case involving contact with electric
		current, temperature
		- Contact with hazardous substances for nasal, oral, inhalation
		- Contact with hazardous substances through the skin or eyes
	Contact with other material or substance	 Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid
		 Burial under a solid Immersion in a gas, in a suspension of
		particles - Another case involving contact with material
		 or substance Vertical motion, crash on / against (the
	Crushing vertically and / or horizontally moving, fall on / against	result of a fall) Horizontal motion, crash on / against
	an immovable object / ground (victim in motion)	 Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion)
		 Struck by object projected Struck by falling object
		 Struck by object that oscillates Struck by object in rotation, motion,
	Struck by moving object, collisions with	displacement, including vehicles - Collision with a moving object, including
	with	vehicles - a collision with a person (the victim is moving)
ND		- Another case involving a collision by moving object, collision with
		 Contact with a sharp Material Agent (knife / blade)
		- Contact with a sharp Material Agent (nail / sharp tool)
	contact with sharp material agent, pointed, hard, abrasive	 Contact agent with hard or abrasive material
		- Another case concerning materials in contact with agent edgy, sharp, hard,
		abrasive - Nesting, trapping, crushing in / inside
		 Nesting, trapping, crushing under Nesting, trapping, crushing between
	Nesting, trapping, crushing,	- Tearing, cutting of a member, a hand, a finger or more parts of the body
	crushing, pinching, etc	- Constrict of whole body or of one or more parts of it
		 By pinching Another case involving nesting, trapping,
		crushing, crushing, pinching, etc - Physical effort at the expense of the
		 musculoskeletal system Physical exertion caused by radiation, noise,
	Physical or mental effort	light, pressure - Effort psychic, mental shock
		- Another case involving mental or physical effort
	Rite calcium ato, by onimals or	 Bite Puncture by insects or fish
	Bite, calcium, etc., by animals or humans	 Shot, football, head, strangulation Another case relating to bite, kick, etc., by

SEVERITY and TYPE OF INJURY (medical report data)

Superficial lesion to left hand and Pelvic area

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 30 ld</i> Part of body injured: left leg Type of injury: Superficial lesion and injury	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	CRUSHING VERTICALLY AND / OR HORIZONTALLY MOVING, FALL ON / AGAINST AN IMMOVABLE OBJECT / GROUND (VICTIM IN MOTION) - Horizontal motion, crash on / against – linked to the collision operator against an iron bar	It is necessary the definition of a pedestrian way and procedures to ensure order and cleanliness in the wards	7
2	SLIPPING, FALLING, LOSS OF STABILITY, COLLAPSE AGENT MATERIAL - Slip, fall, loss of stability, the collapse of a material agent - at the same level - related to the collision of the worker BODY MOVEMENT WITHOUT ANY PHYSICAL STRESS - Another cause relative movement of the body without physical exertion (which usually leads to an external injury) – related to the operator inattention during the move	It must need an pedestrian way that are not subject to deposit of iron bars	6
3	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - Structure - General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,)- linked to the position of the iron bar AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – Procedure – Procedures for workers; –linked to the absence of procedures for maintaining order in the wards and for the crossing of the ladle furnace INTERFERENCE OF FUNCTIONAL VOLUMES - Use of functional volumes - Workers on the move – related to the paths crossing the ladle furnace area	Evaluation of the choice of the solutions adopted	5

4	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - related to the position of iron bar AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – related to the absence of procedure INTERFERENCE OF FUNCTIONAL VOLUMES - related to the interference of functional volumes between worker and ladle furnace area	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - cleanliness of the work environment AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – creation of procedure and formation, training of the worker INTERFERENCE OF FUNCTIONAL VOLUMES - creation of a pedestrian way across ladle furnace area	4
5.1	Absence of the pedestrian way into ladle furnace area	A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - a pedestrian way protected	3
5.2	information, education and training Procedure of the worker for the use of the area	 A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related to the working procedures for different workers B. Definition of the working phases and the contingent operations for the subjects (to the several levels) - (related the definition of working procedures); 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Creation of a safe pedestrian route and maintenance of order in the ladle furnace area	1



	INDIRECT CAUSES OF SECOND LEVEL
	- General criticality [boundary conditions (eg.
v	topography, climate, availability of services, sociological context)]
J	- Specific criticality (seismicity, area exposed to
	 floods, avalanches,) General structural aspects (eg. general and
	local stability, allowable loads, materials, quality, efficiency,)
	- Specific structural Aspects [eg. Structural
	safety equipment, escape routes (eg fire escape) and safe places]
	Consistency with the uses General Plants [eg. distribution systems
	(production) of energy, management systems
	of the general environmental conditions (eg, heating, cooling, air exchange, lighting,),
	communication systems] - Specific Pants (systems of emergency
	management, detection, contrast and alarm)
nce	 Conservation work Participation of adaptation to the norms
	 Machine [tool, operator, auxiliary (eg. pollutant collection systems, cooling, heating,
)]
	- Work Equipment [instrumentation, equipment, localized systems of transport
	energy (eg. power cables,)] - Machinery and transport equipment
	- Devices (command and control, signaling,
	security) - Works provisional (eg. scaffolding,)
	- Suitability to he development of specific operations in the context
of use	- Installation
	- How to use - Maintenance status
	- Audit ;
	 Supervision; Procedures for workers;
	 Procedures for machine operators; Procedures for personnel systems;
	- Procedures for supervisors;
	 Procedures for special operations personnel; Information, formation and Training
	Test Verification functionality before to use
ons	- Types of maintenance applied
	 Revision Updating systems
	- Raw materials and process products
ological	 Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous)
onment	- Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,)
	- Biological agents (eg, viruses, bacteria,)
r the mental	insulation, acoustic,)
mental	- Lighting - Massing available
	- Behaviour (available to any person to produce
	answers, determined from the environment, family regarding social situations, groups, and
oject	objects) Position in relation to the duty cycle and the
	number of shifts
	- Relationships with supervisors and subordinates
	- Contract / employment - Age
	- Work Experience
cts	 Conditions of health Psycho-physical state (eg, depressed, sleepy,
	drunk, drugged,) - Attitude (predisposition for a particular
	mental or physical activity)
	Vehicles / machinery / plant / equipment in
imes	motion, controlled by operator Vehicles / machinery / plant / equipment,
	automated motion (controlled by PLC)
	Workers on the move

OR

	DIRECT CAUSES OF FIRST LEVEL Electrical problem caused by a plant failure
	 Electrical problem caused by a plant failure Electrical problem caused by static electricity
Deviation due to electrical	- Electrical problem caused by missing insulation
problems, explosion, fire	- Electrical problem caused by external radiation / lightning
	- Explosion - Fire
	 Fire Another case relating to electrical problems, explosion, fire
	 Solid state - overflowing, overturning
	- Liquid state - leaking, ozing, flowing, splashing, spraying
overflow, overturn, leak, flow,	- Gaseous state - vaporisation, aerosol formation, gas formation
vaporisation, emission	- Pulverulent material - smoke generation, dust/particles in
	suspension/emission of - Another case relating to overflow, overturn, leak, flow,
	vaporisation, emission
	- Break of material, at junctions, connections, material agent
Breakage, bursting, splitting,	- Break / release of personal protective equipment
slipping, fall, collapse of Material	- Break with explosion of splinters (wood, glass, metal, stone,
Agent	 plastic, etc.) agent material Another case involving rupture, fracture, rupture violent,
	- Another case involving rupture, fracture, rupture violent, sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
	above (which falls on the victim)
Slipping, falling, loss of stability,	- Sliding, fall, loss of stability, collapse of agent material placed
collapse agent material	below (which drags the victim)
rat ugont material	 Slip, fall, loss of stability, the collapse of a material agent - at the same level
	- Another case relating to slipping, falling, loss of stability,
	collapse agent material
	- Problems of total or partial control of the machine (including
	the unintended equipment) as well as the processed material
	- Problems of total or partial control of the means of transport /
	equipment material handling and / or substance (motorized or not)
Loss of control (total or partial) of	- Problems of total or partial control of a means of transport /
machine, means of transport or	handling of people and / or animals
handling equipment, hand-held	- Problems of total or partial control of hand tool (motorized or
tool, object, animal	not) as well as the material machined by
	 Problems of total or partial control of object (led, moved, moved, etc.).
	 Problems of total or partial control of animal
	 Another cause of problems related to total or partial control of
	machinery, transportation / handling equipment, hand tools or
	objects, animals
	- Fall of person from the top through the opening
	 Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level
Slipping - Stumbling and falling -	 Suppling of tripping - with the fall of person - at the same level Loss of balance - with the fall of man - from
Fall of persons	- Loss of balance - with the fall of person - at the same level
	- Slipping or tripping on machinery
	- Another case involving slipping or tripping, loss of balance -
	with the fall of person
	 Walking on a sharp object Kneel, sit, lean against
	 Kneel, sit, lean against Being grabbed, dragged, or moved by something from their
Body movement without any	momentum
physical stress	- Uncoordinated movements, gestures, inopportune,
	inappropriate
	- Another cause relative movement of the body without physical
	exertion (which usually leads to an external injury)
	 Lifting, carrying or standing Pushing, pulling, pulling
	 Pusning, pulling Depositing, dropping
	- Twisting, turning, turning
£	- Step false twisting of the leg or ankle, slipping without falling
	- Another cause relative movement of the body during physical
	exertion (which usually leads to an internal injury)
	- Surprise, fear
	- Violence, aggression, threat - including employees of the
	 Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank
Shock, fright, violence, aggression,	robbery, assaulting bus drivers, etc.).
threat, presence	 Aggression, mobs, violence by animals
	- Presence of the victim or a third party that creates in itself a
	danger to the victim / for himself and if any other
	- Another case involving surprise, fright, violence, aggression,
	threat, presence

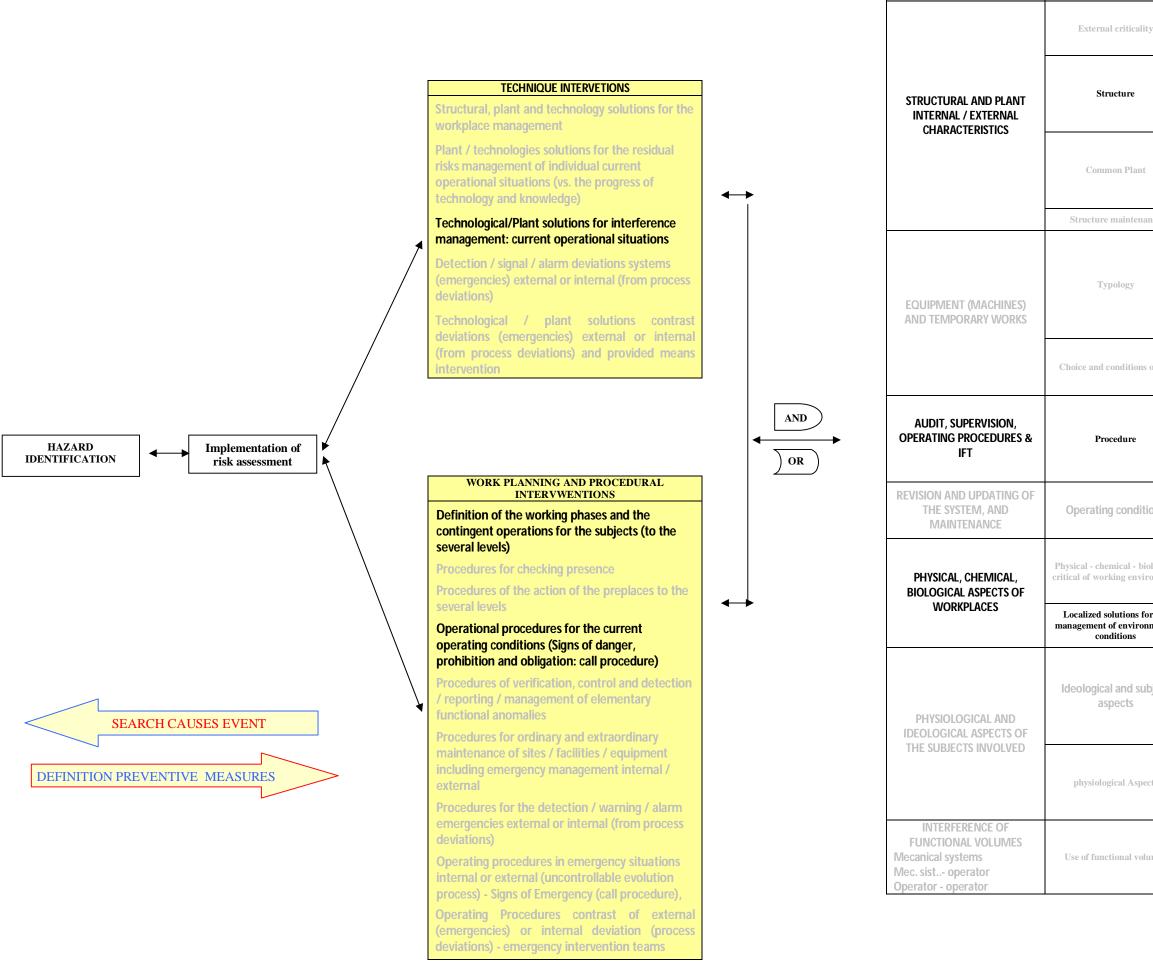
		DIRECT	CAUSE
	Contact with electric current, temperature	-	Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot Contact with object or cold or frozen Another case involving contact with electric current, temperature
	Contact with other material or substance	-	Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with material or substance
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	- t -	Vertical motion, crash on / against (the result of a fall) Horizontal motion, crash on / against Another case involving crushing vertical and / or horizontal moving, fall on / against an inmovable object / ground (victim in motion)
AND	Struck by moving object, collisions with	-	Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
	contact with sharp material agent, pointed, hard, abrasive	-	Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
	Nesting, trapping, crushing, crushing, pinching, etc	-	Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping, crushing, crushing, pinching, etc
	Physical or mental effort	-	Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
	Bite, calcium, etc., by animals or humans	-	Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans

SEVERITY and TYPE OF INJURY (medical report data) Superficial lesion and injury to left leg

4

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 30 ld</i> Part of body injured: left ankle Type of injury: Sprain	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	CRUSHING VERTICALLY AND / OR HORIZONTALLY MOVING, FALL ON / AGAINST AN IMMOVABLE OBJECT / GROUND (VICTIM IN MOTION) - Horizontal motion, crash on / against – linked to the collision operator against an iron bar	It is necessary the definition of a storage area for the materials, like iron bar or axes, and procedures to ensure order and cleanliness in the wards	7
2	SLIPPING, FALLING, LOSS OF STABILITY, COLLAPSE AGENT MATERIAL - Slipping or tripping - with the fall of person - at the same level -related to the fall of the worker BODY MOVEMENT WITHOUT ANY PHYSICAL STRESS - Another cause relative movement of the body without physical exertion (which usually leads to an external injury) – related to the operator inattention during the movement	It must need a storage area for the materials	6
3	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - Structure - General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,)- linked to the position of the material (pieces of iron and axes) AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – Procedure – Procedures for workers; –linked to the absence of procedures for maintaining order in the wards PHYSICAL, CHEMICAL, BIOLOGICAL ASPECTS OF WORKPLACES - Localized solutions for the management of environmental conditions - Massing available – related to the storage area of materials	Evaluation of the choice of the solutions adopted	5

4	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - related to the position of the materials AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – related to the absence of procedure PHYSICAL, CHEMICAL, BIOLOGICAL ASPECTS OF WORKPLACES - related to the interference of functional volumes between worker and materials	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - cleanliness of the work environment AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – creation of procedure and formation, training of the worker PHYSICAL, CHEMICAL, BIOLOGICAL ASPECTS OF WORKPLACES - creation of a storage area for materials	4
5.1	Absence of the storage area and absence of a warning of an obstacle on the path	A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - path for pedestrian only and definition of a storage area	3
5.2	information, education and training Procedure of the worker for the use of the area	 A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related to the working procedures for different workers B. Definition of the working phases and the contingent operations for the subjects (to the several levels) - (related the definition of working procedures); 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Creation of a safe path for only pedestrian and definition of a storage area for materials	1



- General criticality [boundary conditions (eg. topography, climate, availability of services, sociological context)] - Specific criticality (seismicity, area exposed to floods, avalanches,) - General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,) - Specific structural Aspects [eg. Structural safety equipment, escape routes (eg fire escape) and safe places] - General Plants [eg. distribution systems (production) of energy, management systems of the general environmental conditions (eg. heating, cooling, air exchange, lighting,), communication systems of emergency management, detection, contrast and alarn) - Specific Pants (systems of emergency management, detection systems config, heating,)] - Machine [tool, operator, auxiliary (eg. pollutant collection systems, colling, heating,)] - Machine (local, operator, auxiliary (eg. pollutant collection systems of transport energy (eg. power cables,)] - Machiney and transport equipment - Devices (command and control, signaling, security) - Suitability to he development of specific operations in the context - Installation - Procedures for workers; - Procedures for personnel systems; - Procedures for specific operations and Trai		INDIRECT CAUSES OF SECOND LEVEL
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	imes	Vehicles / machinery / plant / equipment,

OR

IN	DIRECT CAUSES OF FIRST LEVEL
	 Electrical problem caused by a plant failure Electrical problem caused by static electricity
Deviation due to electrical	 Electrical problem caused by missing insulation
problems, explosion, fire	- Electrical problem caused by external radiation / lightning
	- Explosion
	 Fire Another case relating to electrical problems, explosion, fire
	 Solid state - overflowing, overturning
	- Liquid state - leaking, oozing, flowing, splashing, spraying
overflow, overturn, leak, flow,	- Gaseous state - vaporisation, aerosol formation, gas formation
vaporisation, emission	- Pulverulent material - smoke generation, dust/particles in
	suspension/emission of - Another case relating to overflow, overturn, leak, flow.
	vaporisation, emission
	- Break of material, at junctions, connections, material agent
Breakage, bursting, splitting,	- Break / release of personal protective equipment
slipping, fall, collapse of Material	 Break with explosion of splinters (wood, glass, metal, stone plastic, etc.) agent material
Agent	- Another case involving rupture, fracture, rupture violent.
	sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
	above (which falls on the victim)
Slipping, falling, loss of stability,	 Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim)
collapse agent material	- Slip, fall, loss of stability, the collapse of a material agent - at
	the same level
	- Another case relating to slipping, falling, loss of stability
	collapse agent material Problems of total on portial control of the machine (including
	 Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material
	 Problems of total or partial control of the means of transport
	equipment material handling and / or substance (motorized or
	not)
Loss of control (total or partial) of	- Problems of total or partial control of a means of transport
machine, means of transport or	handling of people and / or animals - Problems of total or partial control of hand tool (motorized or
handling equipment, hand-held tool, object, animal	not) as well as the material machined by
	- Problems of total or partial control of object (led, moved
	moved, etc.).
	- Problems of total or partial control of animal
	 Another cause of problems related to total or partial control of machinery, transportation / handling equipment, hand tools or
	objects, animals
	- Fall of person from the top through the opening
	- Slipping or tripping - with the fall of man - from
Slipping - Stumbling and falling -	- Slipping or tripping - with the fall of person - at the same level
Fall of persons	 Loss of balance - with the fall of man - from Loss of balance - with the fall of person - at the same level
	 Slipping or tripping on machinery
	- Another case involving slipping or tripping, loss of balance -
	with the fall of person
	- Walking on a sharp object
	 Kneel, sit, lean against Being grabbed, dragged, or moved by something from their
Body movement without any	momentum
physical stress	- Uncoordinated movements, gestures, inopportune
	inappropriate
	 Another cause relative movement of the body without physical avortion (which usually loads to an external injury)
	exertion (which usually leads to an external injury) Lifting, carrying or standing
	 Enting, carrying or standing Pushing, pulling, pulling
Body movement under or with	- Depositing, dropping
physical stress	- Twisting, turning, turning
	- Step false twisting of the leg or ankle, slipping without falling
	 Another cause relative movement of the body during physical exertion (which usually leads to an internal injury)
	- Surprise, fear
	 Violence, aggression, threat - including employees of the
	- Violence, aggression, threat-from people external to the
Shock, fright, violence, aggression,	company to the victims in the context of their function (bank
threat, presence	robbery, assaulting bus drivers, etc.).
7 £	 Aggression, mobs, violence by animals Presence of the victim or a third party that creates in itself a
	danger to the victim / for himself and if any other
	- Another case involving surprise, fright, violence, aggression,

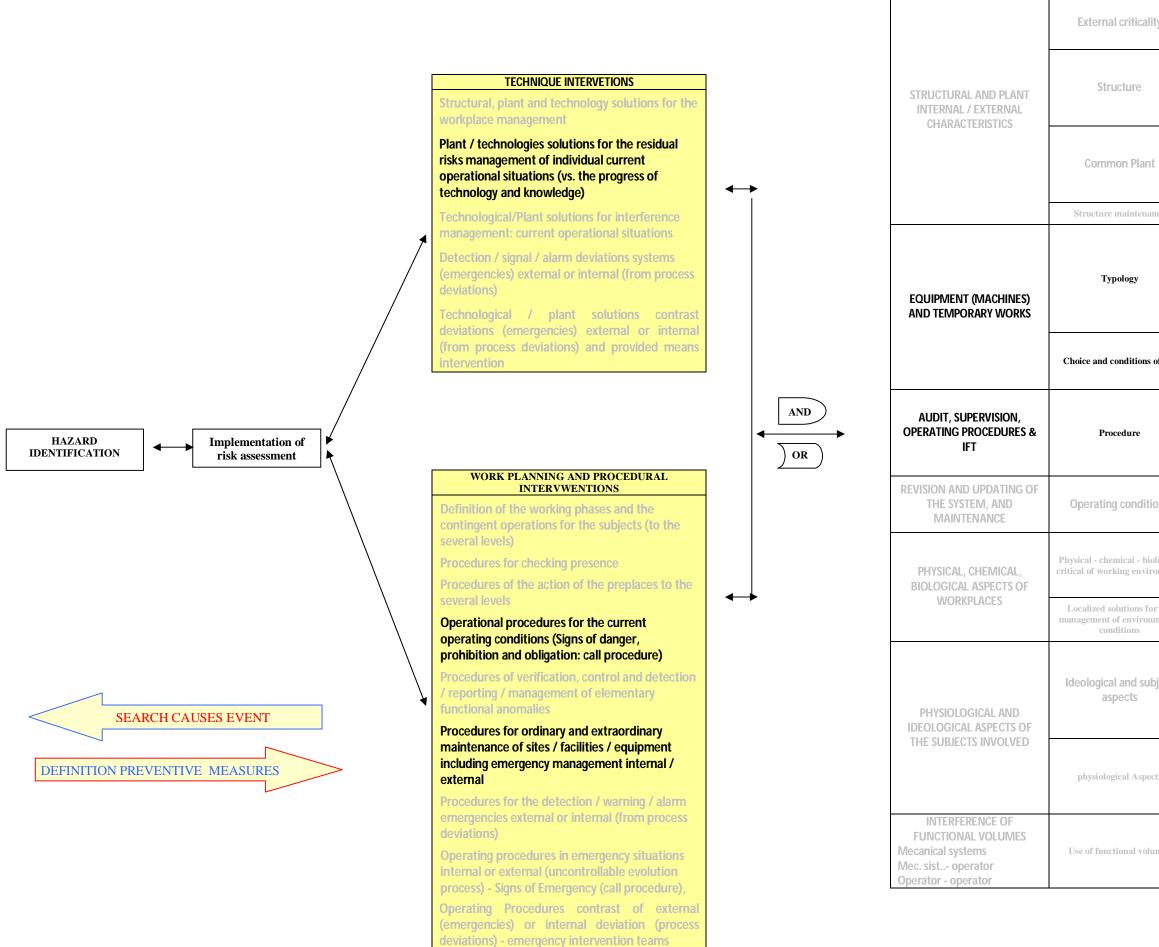
		DIRECT CAUSE
	Contact with electric current, temperature	 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot Contact with object or cold or frozen Another case involving contact with electric current, temperature
	Contact with other material or substance	 Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with material or substance
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (the result of a fall) Horizontal motion, crash on / against Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion)
AND	Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
	contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
	Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping, crushing, crushing, etc
	Physical or mental effort	 Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
	Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans

SEVERITY and TYPE OF INJURY (medical report data)

Left ankle sprain

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 30 ld</i> Part of body injured: right thumb Type of injury: Superficial lesion	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would solve the problem	
1	CONTACT WITH SHARP MATERIAL AGENT, POINTED, HARD, abrasive - Contact agent with hard or abrasive material – <i>linked to the fall and the</i> <i>collision of operator's hand against the abrasive wheel</i>	It is necessary the definition of PPE to use and a safety device for abrasive wheel	7
2	SLIPPING, FALLING, LOSS OF STABILITY, COLLAPSE AGENT MATERIAL - Another case relating to slipping, falling, loss of stability, collapse agent material -related to the fall of the abrasive wheel LOSS OF CONTROL (TOTAL OR PARTIAL) OF MACHINE, MEANS OF TRANSPORT OR HANDLING EQUIPMENT, HAND-HELD TOOL, OBJECT, ANIMAL - Problems of total or partial control of hand tool (motorized or not) as well as the material machined by – related to the loss of control of the abrasive wheel	It must need a safety device for the abrasive wheel	6
3	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Typology - Devices (command and control, signaling, security) - linked to the absence of the safety device of the abrasive wheel EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Choice and conditions of use – How to use –linked to the uncorrect use of the abrasive wheel AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – Procedure – Procedure for workers – related to the absence of procedure for maintenance of abrasive wheel AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – Procedure – Information, formation and Training– related to the information, formation and training of workers	Evaluation of the choice of the solutions adopted	5

4 5.1	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - related to the abrasive wheel AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – related to the absence of procedure Absence of the safety device of abrasive wheel	 EQUIPMENT (MACHINES) AND TEMPORARY WORKS - safety device of abrasive wheel during maintenance AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - creation of procedure and formation, training of the worker A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - safety device of abrasive wheel 	4
5.2	information, education and training Procedure of the worker for the use of the abrasive wheel PPE	 A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related to the working procedures for different workers B. Procedures for ordinary and extraordinary maintenance of sites / facilities / equipment including emergency management internal / external - related the definition of maintenance procedure; 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Choosing an equipment with suitable protection systems and related information, formation and training	1



	INDIRECT CAUSES OF SECOND LEVEL
	- General criticality [boundary conditions (eg.
÷.,	topography, climate, availability of services,
ty	sociological context)] - Specific criticality (seismicity, area exposed to
	floods, avalanches,)
	 General structural aspects (eg. general and local stability, allowable loads, materials,
	quality, efficiency,)
	- Specific structural Aspects [eg. Structural
	safety equipment, escape routes (eg fire escape) and safe places]
	- Consistency with the uses
	- General Plants [eg. distribution systems
	(production) of energy, management systems of the general environmental conditions (eg,
t	heating, cooling, air exchange, lighting,),
	communication systems] - Specific Pants (systems of emergency
	management, detection, contrast and alarm)
nce	- Conservation work
	 Participation of adaptation to the norms Machine [tool, operator, auxiliary (eg.
	pollutant collection systems, cooling, heating,
)] - Work Equipment [instrumentation,
	- Work Equipment [instrumentation, equipment, localized systems of transport
	energy (eg. power cables,)]
	 Machinery and transport equipment Devices (command and control, signaling,
	security)
	 Works provisional (eg. scaffolding,) Suitability to he development of specific
	operations in the context
of use	- Installation - How to use
	- How to use - Maintenance status
	- Audit ;
	- Supervision;
	 Procedures for workers; Procedures for machine operators;
	Procedures for personnel systems;
	 Procedures for supervisors; Procedures for special operations personnel;
	- Information, formation and Training
	 Test Verification functionality before to use
ons	- Types of maintenance applied
	- Revision
	Updating systems Raw materials and process products
	- Products resulting from process deviations
ological onment	 Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration,
onnient	electromagnetic fields and radiation,)
	- Biological agents (eg, viruses, bacteria,)
r the	- Environmental treatment (eg. thermal insulation, acoustic,)
mental	- Lighting
	 Massing available Behaviour (available to any person to produce
	answers, determined from the environment,
alaat	family regarding social situations, groups, and objects)
oject	- Position in relation to the duty cycle and the
	number of shifts - Relationships with supervisors and
	subordinates
	- Contract / employment
	- Age - Work Experience
,	- Conditions of health
ets	 Psycho-physical state (eg, depressed, sleepy, drunk, drugged,)
	- Attitude (predisposition for a particular
	mental or physical activity)
	Vehicles / machinery / plant / equipment in
imes	motion, controlled by operator Vehicles / machinery / plant / equipment,
	automated motion (controlled by PLC)
	Workers on the move

OR

IN	DIRECT CAUSES OF FIRST LEVEL Electrical problem caused by a plant failure
	 Electrical problem caused by a plant failure Electrical problem caused by static electricity
Deviation due to electrical	- Electrical problem caused by missing insulation
problems, explosion, fire	- Electrical problem caused by external radiation / lightning
	- Explosion
	- Fire
	 Another case relating to electrical problems, explosion, fire Solid state - overflowing, overturning
	 Solid state - overflowing, overfurning Liquid state - leaking, oozing, flowing, splashing, spraying
overflow, overturn, leak, flow,	- Gaseous state - vaporisation, aerosol formation, gas formation
vaporisation, emission	- Pulverulent material - smoke generation, dust/particles in
	suspension/emission of
	- Another case relating to overflow, overturn, leak, flow,
	vaporisation, emission
Prochase hypeting colitting	 Break of material, at junctions, connections, material agent Break / release of personal protective equipment
Breakage, bursting, splitting, slipping, fall, collapse of Material	- Break with explosion of splinters (wood, glass, metal, stone,
Agent	plastic, etc.) agent material
	- Another case involving rupture, fracture, rupture violent,
	sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
	 above (which falls on the victim) Sliding, fall, loss of stability, collapse of agent material placed
Slipping, falling, loss of stability,	- Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim)
collapse agent material	- Slip, fall, loss of stability, the collapse of a material agent - at
	the same level
	- Another case relating to slipping, falling, loss of stability,
	collapse agent material
	- Problems of total or partial control of the machine (including
	the unintended equipment) as well as the processed material Broblems of total or partial control of the means of transmet /
	 Problems of total or partial control of the means of transport / equipment material handling and / or substance (motorized or
	not)
Loss of control (total or partial) of	- Problems of total or partial control of a means of transport /
machine, means of transport or	handling of people and / or animals
handling equipment, hand-held	- Problems of total or partial control of hand tool (motorized or
tool, object, animal	not) as well as the material machined by
	- Problems of total or partial control of object (led, moved, moved, etc.).
	 Problems of total or partial control of animal
	 Another cause of problems related to total or partial control of
	machinery, transportation / handling equipment, hand tools or
	objects, animals
	- Fall of person from the top through the opening
	 Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level
Slipping - Stumbling and falling -	 Slipping or tripping - with the fall of person - at the same level Loss of balance - with the fall of man - from
Fall of persons	 Loss of balance - with the fall of person - at the same level
	- Slipping or tripping on machinery
	- Another case involving slipping or tripping, loss of balance -
	with the fall of person
	- Walking on a sharp object
	- Kneel, sit, lean against
Body movement without any	- Being grabbed, dragged, or moved by something from their momentum
physical stress	- Uncoordinated movements, gestures, inopportune,
	- Oncoordinated movements, gestures, mopportune, inappropriate
	- Another cause relative movement of the body without physical
	exertion (which usually leads to an external injury)
	- Lifting, carrying or standing
	- Pushing, pulling, pulling
Body movement under or with	- Depositing, dropping
physical stress	 Twisting, turning Step false twisting of the leg or ankle, slipping without falling
	 Step raise twisting of the leg of ankle, suppling without raining Another cause relative movement of the body during physical
	exertion (which usually leads to an internal injury)
	- Surprise, fear
	 Violence, aggression, threat - including employees of the
	- Violence, aggression, threat-from people external to the
Shack fright violence aggression	 Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank
Shock, fright, violence, aggression, threat, presence	 Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank robbery, assaulting bus drivers, etc.).
Shock, fright, violence, aggression, threat, presence	 Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals
	 Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals Presence of the victim or a third party that creates in itself a
	 Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals

	I	DIRECT CAUSE
	Contact with electric current, temperature	 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot Contact with object or cold or frozen Another case involving contact with electric current, temperature
	Contact with other material or substance	 Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with material or substance
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (the result of a fall) Horizontal motion, crash on / against Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion)
AND	Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
	contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
	Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping, crushing, crushing, etc
	Physical or mental effort	 Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
	Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans

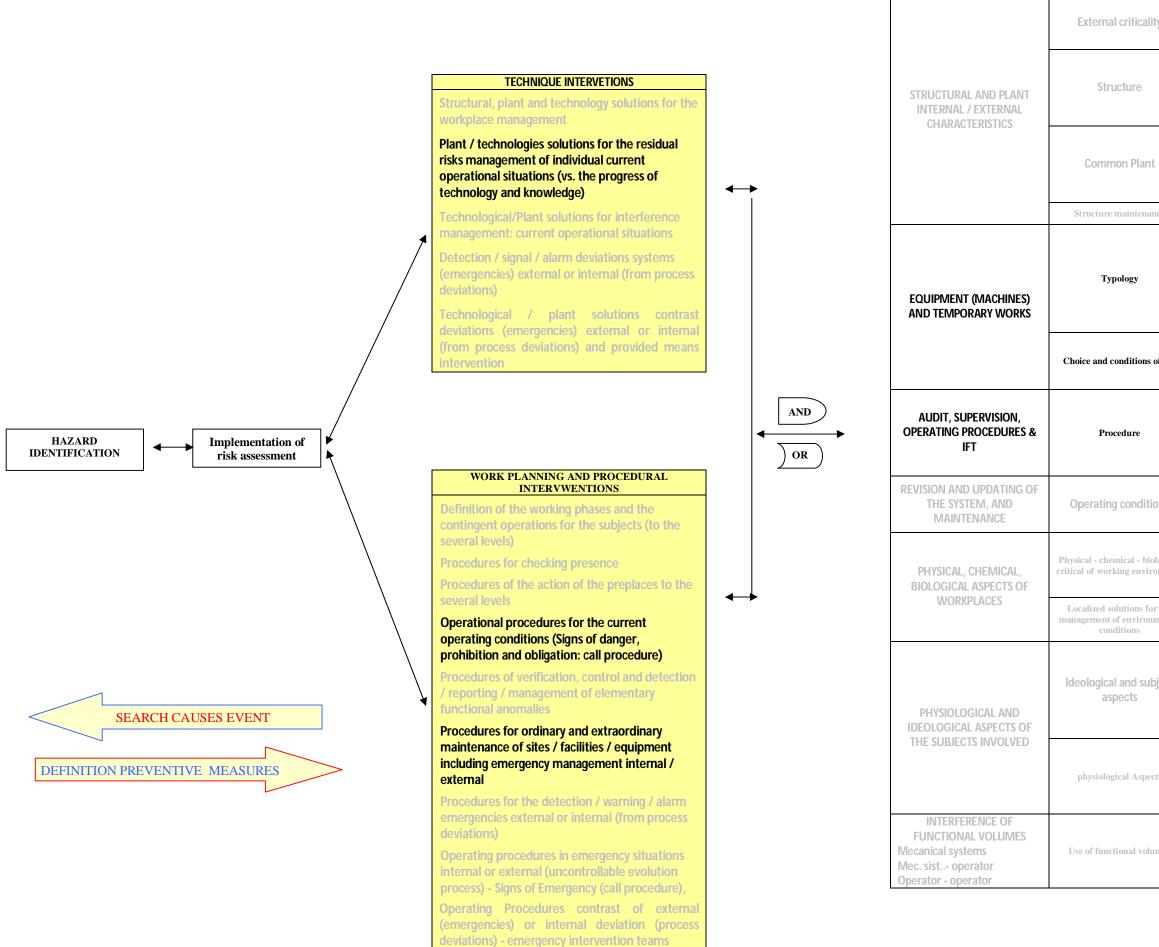
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Superficial lesion on right thumb

SEVERITY and TYPE OF INJURY (medical report data)

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 07 Id</i> Part of body injured: right hand Type of injury: Abrasion	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would solve the problem	
1	CONTACT WITH SHARP MATERIAL AGENT, POINTED, HARD, abrasive - Contact agent with hard or abrasive material – <i>linked to the contact of operator's hand against the sander</i>	It is necessary the definition of PPE to use and a maintenance of the specimen	7
2	LOSS OF CONTROL (TOTAL OR PARTIAL) OF MACHINE, MEANS OF TRANSPORT OR HANDLING EQUIPMENT, HAND-HELD TOOL, OBJECT, ANIMAL - Problems of total or partial control of hand tool (motorized or not) as well as the material machined by – related to the loss of control of the sander	It must need a procedure for maintenance of the equipment and introduction of PPE	6
3	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Typology - Machine [tool, operator, auxiliary (eg. pollutant collection systems, cooling, heating,)] - linked to the typology of the sander and the specimen EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Choice and conditions of use – How to use –linked to the uncorrect use of the equipment EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Choice and conditions of use – Maintenance status – related to the maintenance status of equipment AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – Procedure – Procedure for workers – related to the absence of procedure for maintenance of sander and specimen AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – Procedure – Information, formation and Training– related to the information, formation and training of workers	Evaluation of the choice of the solutions adopted	5

4	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - related to the equipment AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – related to the absence of procedure Equipment not functional	 EQUIPMENT (MACHINES) AND TEMPORARY WORKS - suitable equipment AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT - creation of procedure and formation, training of the worker A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - suitable specimen and sander 	4
5.2	information, education and training Procedure of the worker PPE	 A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related to the working procedures for different workers B. Procedures for ordinary and extraordinary maintenance of sites / facilities / equipment including emergency management internal / external - related the definition of maintenance procedure; 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Choosing an equipment suitable and related information, formation and training	1



	INDIRECT CAUSES OF SECOND LEVEL
	- General criticality [boundary conditions (eg.
lv.	topography, climate, availability of services, sociological context)]
- y	- Specific criticality (seismicity, area exposed to
	floods, avalanches,)
	- General structural aspects (eg. general and local stability, allowable loads, materials,
	quality, efficiency,)
	- Specific structural Aspects [eg. Structural
	safety equipment, escape routes (eg fire escape) and safe places]
	- Consistency with the uses
	- General Plants [eg. distribution systems (production) of energy, management systems
	of the general environmental conditions (eg,
	heating, cooling, air exchange, lighting,),
	communication systems] - Specific Pants (systems of emergency
	management, detection, contrast and alarm)
ice	- Conservation work
	- Participation of adaptation to the norms - Machine [tool, operator, auxiliary (eg.
	pollutant collection systems, cooling, heating,
)] - Work Equipment [instrumentation,
	equipment, localized systems of transport
	energy (eg. power cables,)]
	 Machinery and transport equipment Devices (command and control, signaling,
	security)
	 Works provisional (eg. scaffolding,) Suitability to he development of specific
	operations in the context
of use	- Installation - How to use
	- Maintenance status
	- Audit ;
	 Supervision; Procedures for workers;
	- Procedures for machine operators;
	 Procedures for personnel systems; Procedures for supervisors;
	 Procedures for special operations personnel;
	Information, formation and Training Test
	- Verification functionality before to use
ons	 Types of maintenance applied Revision
	- Updating systems
	- Raw materials and process products
logical	 Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous)
onment	- Physical pollutants (solid, liquid, gaseous)
	electromagnetic fields and radiation,)
4	 Biological agents (eg, viruses, bacteria,) Environmental treatment (eg. thermal
r the nental	insulation, acoustic,)
	- Lighting - Massing available
	- Behaviour (available to any person to produce
	answers, determined from the environment, family regarding social situations, groups, and
ject	objects)
<i>.</i>	 Position in relation to the duty cycle and the number of shifts
	- Relationships with supervisors and
	subordinates - Contract / employment
	- Age
	 Work Experience Conditions of health
ts	- Psycho-physical state (eg, depressed, sleepy,
	drunk, drugged,) - Attitude (predisposition for a particular
	mental or physical activity)
	Vehicles / machinery / plant / equipment in
	motion, controlled by operator
mes	Vehicles / machinery / plant / equipment, automated motion (controlled by PLC)
	Workers on the move

OR

	DIRECT CAUSES OF FIRST LEVEL Electrical problem caused by a plant failure
	 Electrical problem caused by a plant failure Electrical problem caused by static electricity
Deviation due to electrical	- Electrical problem caused by missing insulation
problems, explosion, fire	- Electrical problem caused by external radiation / lightning
	- Explosion
	- Fire
	 Another case relating to electrical problems, explosion, fire Solid state - overflowing, overturning
	 Solut state - overflowing, overfurning Liquid state - leaking, oozing, flowing, splashing, spraying
overflow, overturn, leak, flow,	 Gaseous state - vaporisation, aerosol formation, gas formation
vaporisation, emission	- Pulverulent material - smoke generation, dust/particles in
	suspension/emission of
	- Another case relating to overflow, overturn, leak, flow,
	vaporisation, emission
	 Break of material, at junctions, connections, material agent Break / release of personal protective equipment
Breakage, bursting, splitting, slipping, fall, collapse of Material	 Break / release of personal protective equipment Break with explosion of splinters (wood, glass, metal, stone.
Agent	plastic, etc.) agent material
	- Another case involving rupture, fracture, rupture violent.
	sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
	above (which falls on the victim)
Slipping, falling, loss of stability,	- Sliding, fall, loss of stability, collapse of agent material placed
collapse agent material	 below (which drags the victim) Slip, fall, loss of stability, the collapse of a material agent - at
	- Sup, rail, loss of stability, the compse of a material agent - at the same level
	- Another case relating to slipping, falling, loss of stability.
	collapse agent material
	- Problems of total or partial control of the machine (including
	the unintended equipment) as well as the processed material
	- Problems of total or partial control of the means of transport /
	equipment material handling and / or substance (motorized or
	not) Dashlama of total on nortial control of a means of transport
Loss of control (total or partial) of machine, means of transport or	 Problems of total or partial control of a means of transport / handling of people and / or animals
handling equipment, hand-held	- Problems of total or partial control of hand tool (motorized or
tool, object, animal	not) as well as the material machined by
···· , ··· , ··· ··	- Problems of total or partial control of object (led, moved,
	moved, etc.).
	- Problems of total or partial control of animal
	 Another cause of problems related to total or partial control of machineses the second second
	machinery, transportation / handling equipment, hand tools or objects, animals
	- Fall of person from the top through the opening
	 Slipping or tripping - with the fall of man - from
	- Slipping or tripping - with the fall of person - at the same level
Slipping - Stumbling and falling -	- Loss of balance - with the fall of man - from
Fall of persons	- Loss of balance - with the fall of person - at the same level
	- Slipping or tripping on machinery
	- Another case involving slipping or tripping, loss of balance -
	with the fall of person
	 Walking on a sharp object Kneel, sit, lean against
	 Kneel, sit, lean against Being grabbed, dragged, or moved by something from their
Body movement without any	- being grabbed, dragged, of moved by something from them
physical stress	- Uncoordinated movements, gestures, inopportune.
	inappropriate
	- Another cause relative movement of the body without physical
	exertion (which usually leads to an external injury)
	- Lifting, carrying or standing
	- Pushing, pulling, pulling
Body movement under or with	- Depositing, dropping
physical stress	 Twisting, turning Step false twisting of the leg or ankle, slipping without falling
	 Step faise twisting of the leg of ankle, suppling without failing Another cause relative movement of the body during physical
	exertion (which usually leads to an internal injury)
	- Surprise, fear
	- Violence, aggression, threat - including employees of the
	- Violence, aggression, threat-from people external to the
	company to the victims in the context of their function (bank
	robbery, assaulting bus drivers, etc.).
Shock, fright, violence, aggression, threat. presence	 Aggression, mobs, violence by animals
threat, presence	
	- Presence of the victim or a third party that creates in itself a

]	DIRECT CAUSE
	Contact with electric current, temperature	 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot Contact with object or cold or frozen Another case involving contact with electric current, temperature
	Contact with other material or substance	 Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with material or substance
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (the result of a fall) Horizontal motion, crash on / against Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion)
AND	Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
	contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
	Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping, crushing, crushing, pinching, etc
	Physical or mental effort	 Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
	Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans

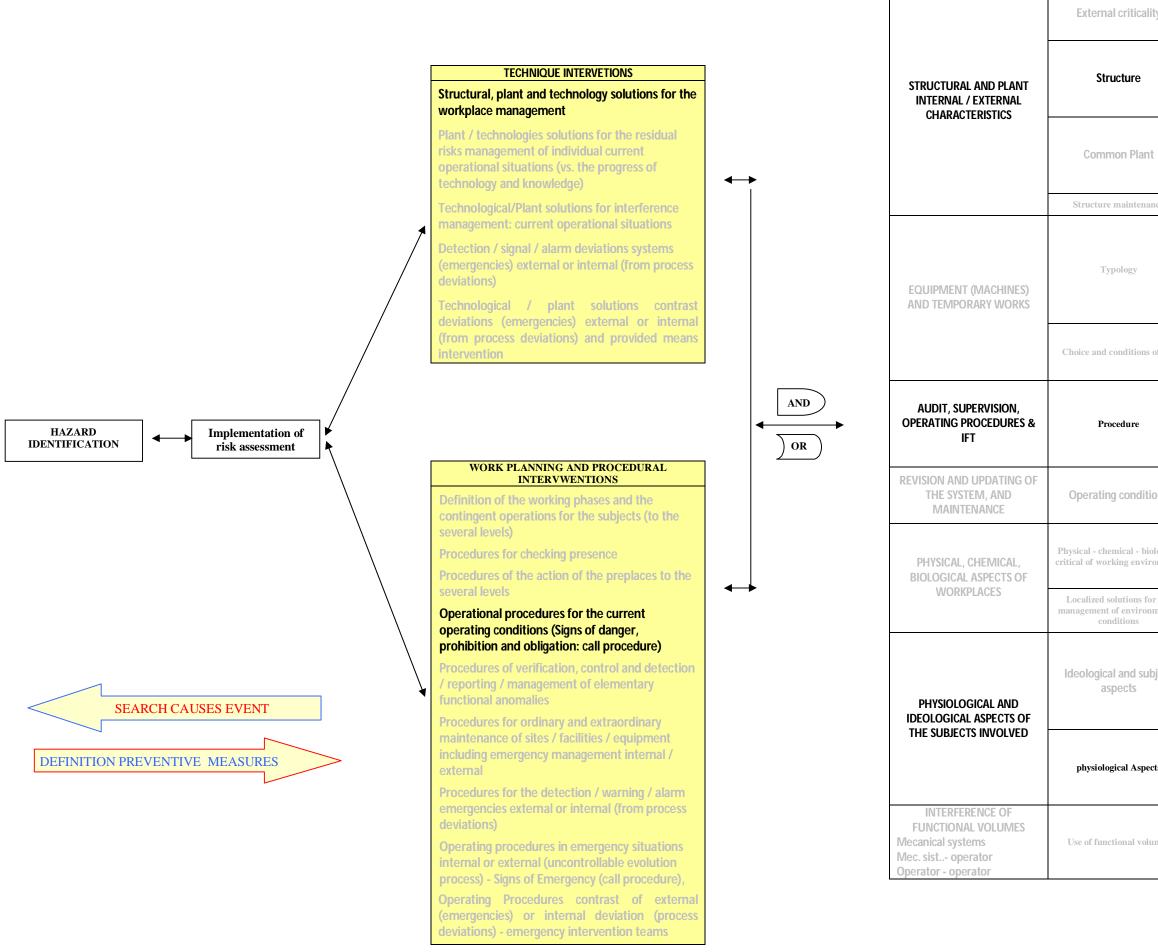
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Abrasion on right hand

SEVERITY and TYPE OF INJURY (medical report data)

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 20 ld</i> Part of body injured: left ankle Type of injury: Sprain	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	CRUSHING VERTICALLY AND / OR HORIZONTALLY MOVING, FALL ON / AGAINST AN IMMOVABLE OBJECT / GROUND (VICTIM IN MOTION) - Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion) abrasive – <i>linked to the fall</i> of operator	It is necessary the definition of procedure for workers movements across the ladle area or an alternative pedestrian path	7
2	SLIPPING - STUMBLING AND FALLING - FALL OF PERSONS - Loss of balance - with the fall of man - from – <i>related to the worker fall down from stair</i>	It must need a procedure or an alternative path for workers	6
3	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – Structure - General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,)- linked to the typology of pedestrian path across ladle area AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – Procedure – Procedure for workers – related to the not upgrade procedure for movements of workers PHYSIOLOGICAL AND IDEOLOGICAL ASPECTS OF THE SUBJECTS INVOLVED - Physiological Aspects - Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) – related to the worker inattention	Evaluation of the choice of the solutions adopted	5
4	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - related to the pedestrian path AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – related to the not upgrade of procedure	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - suitable pedestrian path AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – creation of procedure and formation, training of the worker	4
	PHYSIOLOGICAL AND IDEOLOGICAL ASPECTS OF THE SUBJECTS INVOLVED - related to worker's inattention	PHYSIOLOGICAL AND IDEOLOGICAL ASPECTS OF THE SUBJECTS INVOLVED – state of worker's attention	

5.1	Not completely safety of pedestrian path	A. Structural, plant and technology solutions for the workplace management - safety pedestrian path	3
5.2	information, education and training Procedure of the worker	A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related the definition of procedure	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Definition of a safety pedestrian path and related information, formation and training	1



	INDIRECT CAUSES OF SECOND LEVEL
	- General criticality [boundary conditions (eg.
ty	topography, climate, availability of services, sociological context)]
	 Specific criticality (seismicity, area exposed to floods, avalanches,)
	- General structural aspects (eg. general and
	local stability, allowable loads, materials, quality, efficiency,)
	- Specific structural Aspects [eg. Structural
	safety equipment, escape routes (eg fire escape) and safe places]
	Consistency with the uses General Plants [eg. distribution systems
	(production) of energy, management systems
t i	of the general environmental conditions (eg, heating, cooling, air exchange, lighting,),
	communication systems]
	- Specific Pants (systems of emergency management, detection, contrast and alarm)
nce	- Conservation work
	 Participation of adaptation to the norms Machine [tool, operator, auxiliary (eg.
	pollutant collection systems, cooling, heating,
)] - Work Equipment [instrumentation,
	equipment, localized systems of transport
	energy (eg. power cables,)] - Machinery and transport equipment
	 Devices (command and control, signaling, security)
	- Works provisional (eg. scaffolding,)
	 Suitability to he development of specific operations in the context
of use	- Installation - How to use
	- Maintenance status
	- Audit ;
	 Supervision; Procedures for workers;
	 Procedures for machine operators; Procedures for personnel systems;
	- Procedures for supervisors;
	 Procedures for special operations personnel; Information, formation and Training
	- Test
ons	 Verification functionality before to use Types of maintenance applied
	- Revision - Updating systems
	 Raw materials and process products
logical	 Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous)
onment	- Physical pollutants (eg noise, vibration,
	 electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,)
r the	- Environmental treatment (eg. thermal
mental	insulation, acoustic,) - Lighting
	 Massing available Behaviour (available to any person to produce
	answers, determined from the environment,
oject	family regarding social situations, groups, and objects)
Jeel	 Position in relation to the duty cycle and the number of shifts
	- Relationships with supervisors and
	subordinates - Contract / employment
	- Age
	 Work Experience Conditions of health
ets	- Psycho-physical state (eg, depressed, sleepy,
	drunk, drugged,) - Attitude (predisposition for a particular
	mental or physical activity)
	Vehicles / machinery / plant / equipment in
imes	motion, controlled by operator Vehicles / machinery / plant / equipment,
	automated motion (controlled by PLC) Workers on the move

OR

	- Electrical problem caused by a plant failure
	- Electrical problem caused by static electricity
Deviation due to electrical	 Electrical problem caused by missing insulation Electrical problem caused by external radiation / lightning
problems, explosion, fire	 Execution problem caused by external radiation / lightning Explosion
	- Fire
	- Another case relating to electrical problems, explosion, fire
	 Solid state - overflowing, overturning Liquid state - leaking, oozing, flowing, splashing, spraying
overflow, overturn, leak, flow,	 Enquiti state - reaking, oozing, nowing, sprasning, spraying Gaseous state - vaporisation, aerosol formation, gas formation
vaporisation, emission	- Pulverulent material - smoke generation, dust/particles in
	suspension/emission of
	- Another case relating to overflow, overturn, leak, flow,
	vaporisation, emission - Break of material, at junctions, connections, material agent
Breakage, bursting, splitting,	- Break / release of personal protective equipment
slipping, fall, collapse of Material	- Break with explosion of splinters (wood, glass, metal, stone,
Agent	plastic, etc.) agent material - Another case involving rupture, fracture, rupture violent,
	 Another case involving rupture, fracture, rupture violent, sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
	above (which falls on the victim)
Slipping, falling, loss of stability,	 Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim)
collapse agent material	- Slip, fall, loss of stability, the collapse of a material agent - at
	the same level
	- Another case relating to slipping, falling, loss of stability,
	collapse agent material - Problems of total or partial control of the machine (including
	- Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material
	- Problems of total or partial control of the means of transport /
	equipment material handling and / or substance (motorized or
I are af apprend (total as the total	not) - Problems of total or partial control of a means of transport /
Loss of control (total or partial) of machine, means of transport or	 Problems of total or partial control of a means of transport / handling of people and / or animals
handling equipment, hand-held	- Problems of total or partial control of hand tool (motorized or
tool, object, animal	not) as well as the material machined by
	 Problems of total or partial control of object (led, moved, moved, etc.).
	 Problems of total or partial control of animal
	 Another cause of problems related to total or partial control of
	machinery, transportation / handling equipment, hand tools or
	objects, animals - Fall of person from the top through the opening
	 Fail of person from the top through the opening Slipping or tripping - with the fall of man - from
	- Slipping or tripping - with the fall of person - at the same level
Slipping - Stumbling and falling - Fall of persons	- Loss of balance - with the fall of man - from
Fail of persons	 Loss of balance - with the fall of person - at the same level Slipping or tripping on machinery
	 Another case involving slipping or tripping, loss of balance -
	with the fall of person
	- Walking on a sharp object
	- Kneel, sit, lean against Being grabbed dragged or moved by something from their
Body movement without any	 Being grabbed, dragged, or moved by something from their momentum
physical stress	- Uncoordinated movements, gestures, inopportune,
	inappropriate
	 Another cause relative movement of the body without physical exertion (which usually leads to an external injury)
	 Lifting, carrying or standing
	- Pushing, pulling, pulling
Body movement under or with	- Depositing, dropping
physical stress	 Twisting, turning, turning Step false twisting of the leg or ankle, slipping without falling
	 Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physical
	exertion (which usually leads to an internal injury)
	- Surprise, fear
	- Violence, aggression, threat - including employees of the
	- Violence, aggression, threat-from people external to the
Shock, fright, violence, aggression,	company to the victims in the context of their function (bank robbery, assaulting bus drivers, etc.).
threat, presence	 Aggression, mobs, violence by animals
	- Presence of the victim or a third party that creates in itself a
	danger to the victim / for himself and if any other
	- Another case involving surprise, fright, violence, aggression,

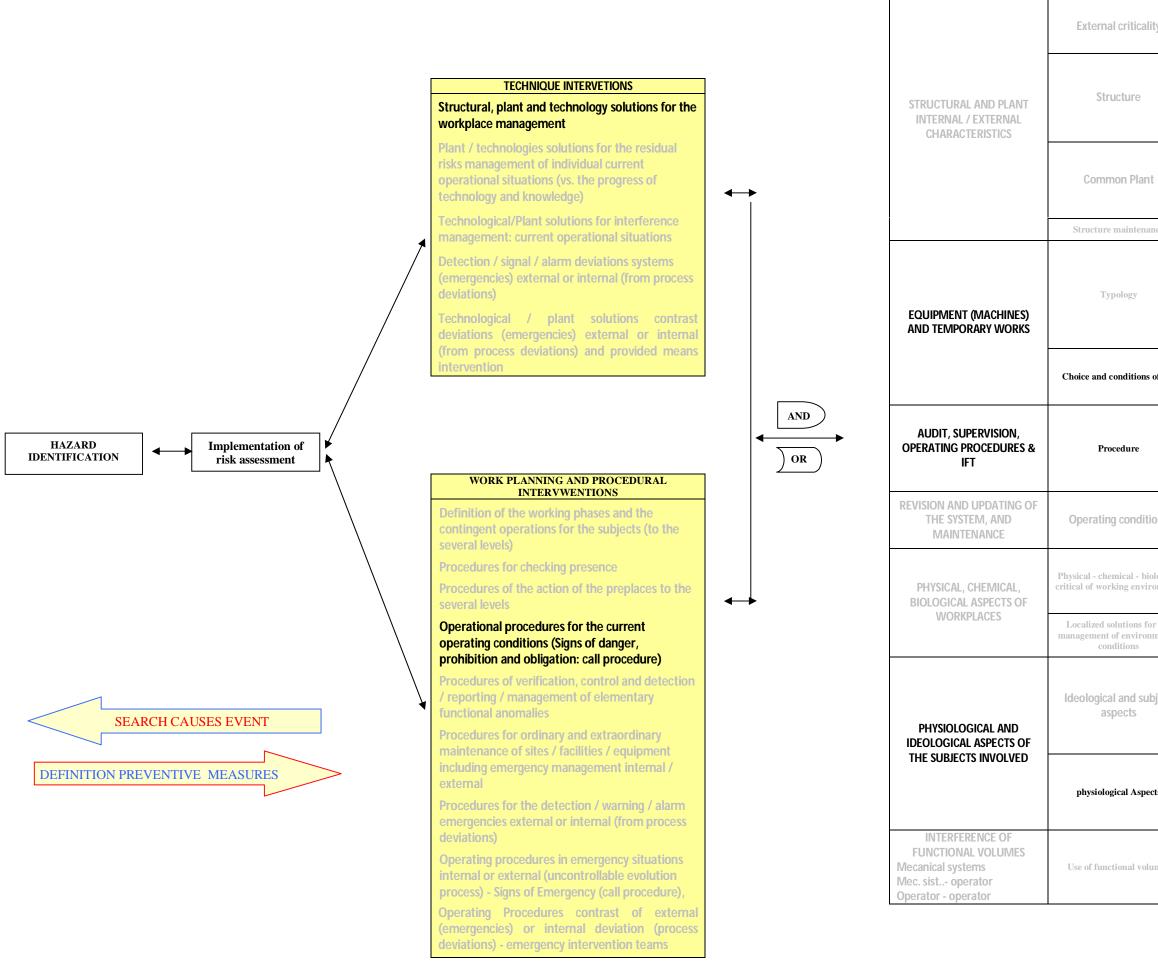
	D	DIRECT CAUSE
	Contact with electric current, temperature	 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot Contact with object or cold or frozen Another case involving contact with electric current, temperature
	Contact with other material or substance	 Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with material or substance
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (the result of a fall) Horizontal motion, crash on / against Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion)
AND	Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
	contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
	Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping, crushing, crushing, pinching, etc.,
	Physical or mental effort	 Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
	Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans

Sprain on left ankle

SEVERITY and TYPE OF INJURY (medical report data)

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 20 Id</i> Part of body injured: thumb of the right hand Type of injury: Contusion	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	NESTING, TRAPPING, CRUSHING, CRUSHING, PINCHING, ETC Nesting, trapping, crushing under – linked to the crushing of the finger by the hammer	It is necessary the definition of procedure for workers and related information, formation and training	7
2	LOSS OF CONTROL (TOTAL OR PARTIAL) OF MACHINE, MEANS OF TRANSPORT OR HANDLING EQUIPMENT, HAND-HELD TOOL, OBJECT, ANIMAL - Problems of total or partial control of hand tool (motorized or not) as well as the material machined by – related to the loss of control of hammer	It must need a procedure and information, formation and training of workers	6
3	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Choice and conditions of use - How to use- linked to the use of the hammer AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – Procedure – Procedure for workers – related to the absence of procedure and related IFT PHYSIOLOGICAL AND IDEOLOGICAL ASPECTS OF THE SUBJECTS INVOLVED - Physiological Aspects - Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) – related to the worker inattention	Evaluation of the choice of the solutions adopted	5
4	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - related to the type of hammer AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – related to the absence of procedure PHYSIOLOGICAL AND IDEOLOGICAL ASPECTS OF THE SUBJECTS INVOLVED - related to worker's inattention	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - suitable hammer AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – creation of procedure and formation, training of the worker PHYSIOLOGICAL AND IDEOLOGICAL ASPECTS OF THE SUBJECTS INVOLVED – state of worker's attention	4

5.1	Absence of a protection system for worker's hand	A. Structural, plant and technology solutions for the workplace management - suitable and safety hammer	3
5.2	information, education and training Procedure of the worker	A. Operational procedures for the current operating conditions (Signs of danger, prohibition and obligation: call procedure) - related the definition of procedure and IFT	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Definition of procedure and related information, formation and training with choice of a suitable hammer	1



	INDIRECT CAUSES OF SECOND LEVEL
	- General criticality [boundary conditions (eg.
ty	topography, climate, availability of services, sociological context)]
cy.	 Specific criticality (seismicity, area exposed to floods, avalanches,)
	- General structural aspects (eg. general
	and local stability, allowable loads, materials, quality, efficiency,)
	- Specific structural Aspects [eg. Structural
	safety equipment, escape routes (eg fire escape) and safe places]
	Consistency with the uses General Plants [eg. distribution systems
	- General Plants [eg. distribution systems (production) of energy, management systems
ŀ	of the general environmental conditions (eg, heating, cooling, air exchange, lighting,),
-	communication systems]
	- Specific Pants (systems of emergency management, detection, contrast and alarm)
nce	Conservation work Participation of adaptation to the norms
	- Machine [tool, operator, auxiliary (eg.
	pollutant collection systems, cooling, heating,)]
	- Work Equipment [instrumentation, equipment, localized systems of transport
	energy (eg. power cables,)]
	 Machinery and transport equipment Devices (command and control, signaling,
	security) - Works provisional (eg. scaffolding,)
	- Suitability to he development of specific
of use	operations in the context - Installation
	- How to use - Maintenance status
	- Audit ;
	- Supervision; - Procedures for workers;
	- Procedures for machine operators;
	 Procedures for personnel systems; Procedures for supervisors;
	 Procedures for special operations personnel; Information, formation and Training
	- Test
ons	 Verification functionality before to use Types of maintenance applied
	- Revision Updating systems
	 Raw materials and process products
logical	 Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous)
onment	- Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,)
	 Biological agents (eg, viruses, bacteria,)
r the	- Environmental treatment (eg. thermal insulation, acoustic,)
mental	- Lighting - Massing available
	- Behaviour (available to any person to produce
	answers, determined from the environment, family regarding social situations, groups, and
oject	objects) - Position in relation to the duty cycle and the
	number of shifts
	- Relationships with supervisors and subordinates
	Contract / employment Age
	- Work Experience
cts	 Conditions of health Psycho-physical state (eg, depressed, sleepy,
	drunk, drugged,) - Attitude (predisposition for a particular
	mental or physical activity)
	Vehicles / machinery / plant / equipment in
imes	motion, controlled by operator Vehicles / machinery / plant / equipment,
	automated motion (controlled by PLC) Workers on the move

OR

	DIRECT CAUSES OF FIRST LEVEL Electrical problem caused by a plant failure
	- Electrical problem caused by static electricity
Deviation due to electrical	- Electrical problem caused by missing insulation
problems, explosion, fire	 Electrical problem caused by external radiation / lightning Explosion
	- Explosion - Fire
	- Another case relating to electrical problems, explosion, fire
	- Solid state - overflowing, overturning
	- Liquid state - leaking, oozing, flowing, splashing, spraying
overflow, overturn, leak, flow,	- Gaseous state - vaporisation, aerosol formation, gas formation
vaporisation, emission	 Pulverulent material - smoke generation, dust/particles in suspension/emission of
	- Another case relating to overflow, overturn, leak, flow
	vaporisation, emission
	- Break of material, at junctions, connections, material agent
Breakage, bursting, splitting,	- Break / release of personal protective equipment
slipping, fall, collapse of Material Agent	 Break with explosion of splinters (wood, glass, metal, stone plastic, etc.) agent material
	- Another case involving rupture, fracture, rupture violent
	sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
	above (which falls on the victim)
Slipping, falling, loss of stability,	 Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim)
collapse agent material	- Slip, fall, loss of stability, the collapse of a material agent - at
	the same level
	- Another case relating to slipping, falling, loss of stability
	collapse agent material
	 Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material
	 Problems of total or partial control of the means of transport
	equipment material handling and / or substance (motorized or
	not)
Loss of control (total or partial) of	- Problems of total or partial control of a means of transport
machine, means of transport or	handling of people and / or animals
handling equipment, hand-held	 Problems of total or partial control of hand tool (motorized on not) as well as the material machined by
tool, object, animal	- Problems of total or partial control of object (led, moved
	moved, etc.).
	- Problems of total or partial control of animal
	- Another cause of problems related to total or partial control of
	machinery, transportation / handling equipment, hand tools on objects, animals
	- Fall of person from the top through the opening
	- Slipping or tripping - with the fall of man - from
	- Slipping or tripping - with the fall of person - at the same level
Slipping - Stumbling and falling - Fall of persons	- Loss of balance - with the fall of man - from
r an or persons	- Loss of balance - with the fall of person - at the same level
	 Slipping or tripping on machinery Another case involving slipping or tripping, loss of balance
	 Another case involving suppling or tripping, loss of balance with the fall of person
	- Walking on a sharp object
	- Kneel, sit, lean against
	- Being grabbed, dragged, or moved by something from their
	momentum
E 0	 Uncoordinated movements, gestures, inopportune inappropriate
	- Another cause relative movement of the body without physical
	exertion (which usually leads to an external injury)
	- Lifting, carrying or standing
	- Pushing, pulling,
Body movement under or with	- Depositing, dropping
physical stress	 Twisting, turning Step false twisting of the leg or ankle, slipping without falling
	 Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physical
	exertion (which usually leads to an internal injury)
	- Surprise, fear
	- Violence, aggression, threat - including employees of the
	- Violence, aggression, threat-from people external to the
Shock, fright, violence, aggression,	company to the victims in the context of their function (bank
	 robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals
threat, presence	
	- Presence of the victim or a third narty that creates in itself a
	 Presence of the victim or a third party that creates in itself a danger to the victim / for himself and if any other
	 Presence of the victim or a third party that creates in itself a danger to the victim / for himself and if any other Another case involving surprise, fright, violence, aggression.

	D	IRECT CAUSE
	Contact with electric current, temperature	 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot Contact with object or cold or frozen Another case involving contact with electric current, temperature
	Contact with other material or substance	 Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with material or substance
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (the result of a fall) Horizontal motion, crash on / against Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion)
AND	Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
	contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
	Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping, crushing, crushing, etc
	Physical or mental effort	 Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
	Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans

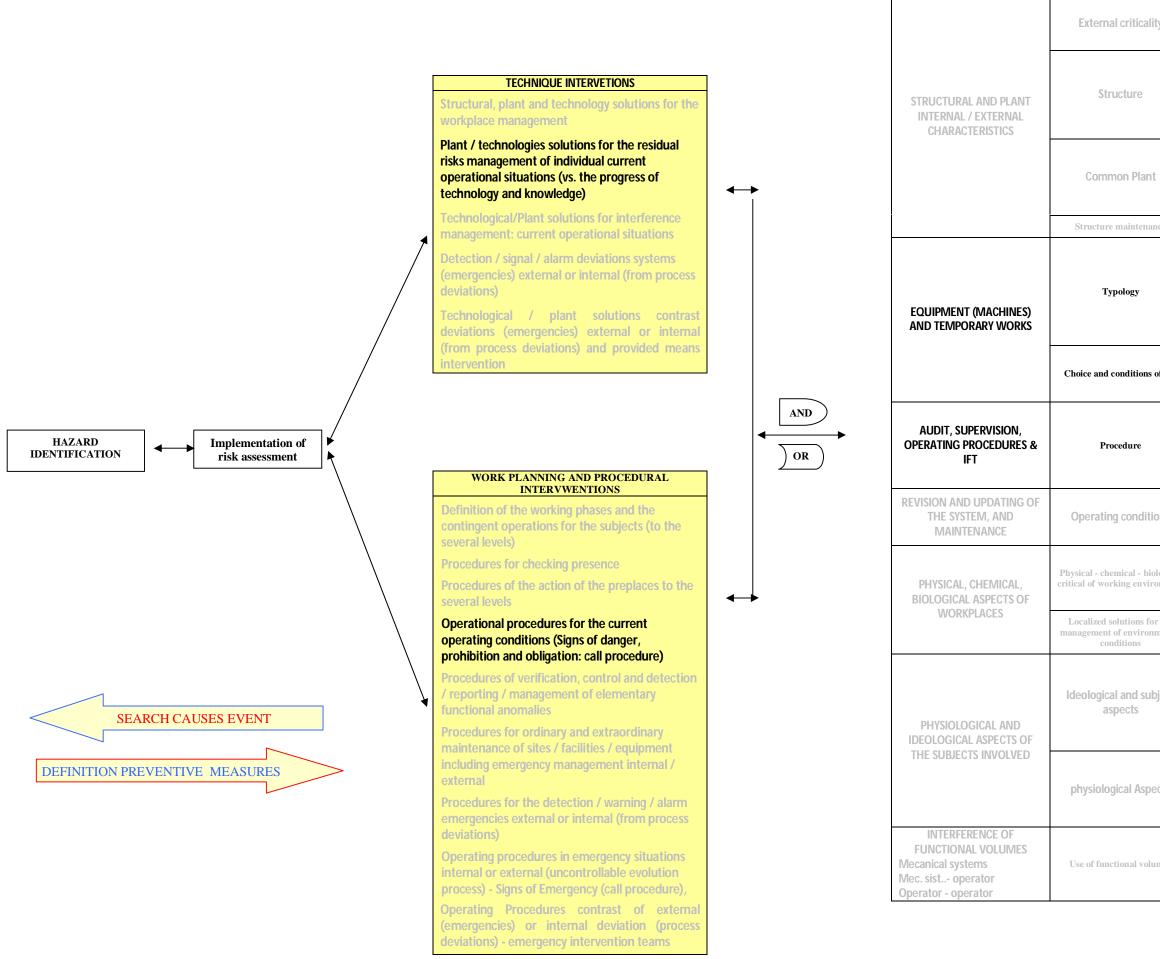
TYPE (medical Contu thum

SEVERITY and TYPE OF INJURY (medical report data)

Contusion on thumb of the right hand

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 35 Id</i> Part of body injured: right arm Type of injury: Distraction	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	PHYSICAL OR MENTAL EFFORT - Physical effort at the expense of the musculoskeletal system – linked to the arm effort during the lift of equipment	It is necessary a suitable equipment	7
2	LOSS OF CONTROL (TOTAL OR PARTIAL) OF MACHINE, MEANS OF TRANSPORT OR HANDLING EQUIPMENT, HAND-HELD TOOL, OBJECT, ANIMAL - Problems of total or partial control of hand tool (motorized or not) as well as the material machined by – related to the loss of control of the equipment BODY MOVEMENT UNDER OR WITH PHYSICAL STRESS - Lifting, carrying or standing – related to the worker's effort for the lift of equipment	It must need a suitable equipment and a procedure with information, formation and training of workers	6
3	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Typology - Machine [tool, operator, auxiliary (eg. pollutant collection systems, cooling, heating,)] linked to the equipment use for the lift of the materials EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Choice and conditions of use - How to use- linked to the use of the equipment AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – Procedure – Procedure for workers – related to the absence of procedure and related IFT	Evaluation of the choice of the solutions adopted	5
4	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - related to the type of equipment AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – related to the absence of procedure	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - suitable equipment AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – creation of procedure and formation, training of the worker	4

5.1	Equipment not suitable for the work to be done	A. Structural, plant and technology solutions for the workplace management - suitable and safety equipment	3
5.2	information, education and training Procedure of the worker	A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - related the definition of procedure and IFT	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Choice of a suitable equipment for the lift of materials	1



	INDIRECT CAUSES OF SECOND LEVEL
	- General criticality [boundary conditions (eg.
ty	topography, climate, availability of services, sociological context)]
-)	 Specific criticality (seismicity, area exposed to floods, avalanches,)
	- General structural aspects (eg. general
	and local stability, allowable loads,
	materials, quality, efficiency,)
	- Specific structural Aspects [eg. Structural safety equipment, escape routes (eg fire escape)
	and safe places]
	Consistency with the uses General Plants [eg. distribution systems
	(production) of energy, management systems
t	of the general environmental conditions (eg, heating, cooling, air exchange, lighting,),
	communication systems] - Specific Pants (systems of emergency
	management, detection, contrast and alarm)
nce	 Conservation work Participation of adaptation to the norms
	- Machine [tool, operator, auxiliary (eg.
	pollutant collection systems, cooling, heating,)]
	- Work Equipment [instrumentation,
	equipment, localized systems of transport energy (eg. power cables,)]
	- Machinery and transport equipment
	- Devices (command and control, signaling, security)
	 Works provisional (eg. scaffolding,) Suitability to he development of specific
	operations in the context
of use	- Installation - How to use
	- Maintenance status
	- Audit ; - Supervision;
	 Procedures for workers;
	 Procedures for machine operators; Procedures for personnel systems;
	- Procedures for supervisors;
	 Procedures for special operations personnel; Information, formation and Training
	- Test
ons	 Verification functionality before to use Types of maintenance applied
	- Revision - Updating systems
	 Raw materials and process products
logical	 Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous)
onment	- Physical pollutants (eg noise, vibration,
	 electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,)
r the	- Environmental treatment (eg. thermal
mental	insulation, acoustic,) - Lighting
	 Massing available Behaviour (available to any person to produce
	answers, determined from the environment,
oject	family regarding social situations, groups, and objects)
Jeer	 Position in relation to the duty cycle and the number of shifts
	- Relationships with supervisors and
	subordinates - Contract / employment
	- Age
	 Work Experience Conditions of health
ects	- Psycho-physical state (eg, depressed, sleepy,
	drunk, drugged,) - Attitude (predisposition for a particular
	mental or physical activity)
	Vehicles / machinery / plant / equipment in
imes	motion, controlled by operator Vehicles / machinery / plant / equipment,
	automated motion (controlled by PLC)
	Workers on the move

OR

	DIRECT CAUSES OF FIRST LEVEL - Electrical problem caused by a plant failure
	- Electrical problem caused by static electricity
Deviation due to electrical	- Electrical problem caused by missing insulation
problems, explosion, fire	 Electrical problem caused by external radiation / lightning Explosion
	- Expression
	- Another case relating to electrical problems, explosion, fire
	- Solid state - overflowing, overturning
	- Liquid state - leaking, oozing, flowing, splashing, spraying
overflow, overturn, leak, flow,	 Gaseous state - vaporisation, aerosol formation, gas formation Pulverulent material - smoke generation, dust/particles in
vaporisation, emission	suspension/emission of
	- Another case relating to overflow, overturn, leak, flow
	vaporisation, emission
	- Break of material, at junctions, connections, material agent
Breakage, bursting, splitting,	 Break / release of personal protective equipment Break with explosion of splinters (wood, glass, metal, stone
slipping, fall, collapse of Material Agent	plastic, etc.) agent material
	- Another case involving rupture, fracture, rupture violent
	sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
	above (which falls on the victim) Sliding fall, loss of stability, collepse of egent material placed
Slipping, falling, loss of stability,	 Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim)
collapse agent material	- Slip, fall, loss of stability, the collapse of a material agent - at
	the same level
	- Another case relating to slipping, falling, loss of stability
	collapse agent material
	 Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material
	- Problems of total or partial control of the means of transport
	equipment material handling and / or substance (motorized or
	not)
Loss of control (total or partial) of	- Problems of total or partial control of a means of transport
machine, means of transport or	 handling of people and / or animals Problems of total or partial control of hand tool (motorized or
handling equipment, hand-held tool, object, animal	not) as well as the material machined by
tool, object, anna	- Problems of total or partial control of object (led, moved
	moved, etc.).
	- Problems of total or partial control of animal
	 Another cause of problems related to total or partial control of machinery, transportation / handling equipment, hand tools of
	objects, animals
	- Fall of person from the top through the opening
	- Slipping or tripping - with the fall of man - from
Slipping - Stumbling and falling -	- Slipping or tripping - with the fall of person - at the same level
Fall of persons	 Loss of balance - with the fall of man - from Loss of balance - with the fall of person - at the same level
	 Slipping or tripping on machinery
	- Another case involving slipping or tripping, loss of balance -
	with the fall of person
	- Walking on a sharp object
	- Kneel, sit, lean against
Body movement without any	 Being grabbed, dragged, or moved by something from their momentum
physical stress	- Uncoordinated movements, gestures, inopportune.
	inappropriate
	- Another cause relative movement of the body without physical
	exertion (which usually leads to an external injury)
	Lifting, carrying or standing Pushing, pulling, pulling
Body movement under or with	 Pusning, pulling Depositing, dropping
physical stress	- Twisting, turning, turning
x v ·································	- Step false twisting of the leg or ankle, slipping without falling
	- Another cause relative movement of the body during physical
	exertion (which usually leads to an internal injury)
	- Surprise, fear Violence, aggression, threat - including amployees of the
	 Violence, aggression, threat - including employees of the Violence, aggression, threat-from people external to the
	company to the victims in the context of their function (bank
Shock, fright, violence, aggression,	robbery, assaulting bus drivers, etc.).
threat, presence	- Aggression, mobs, violence by animals
	- Presence of the victim or a third party that creates in itself a
	 danger to the victim / for himself and if any other Another case involving surprise, fright, violence, aggression.
	inother case involving surprise, fright, violence, aggression,

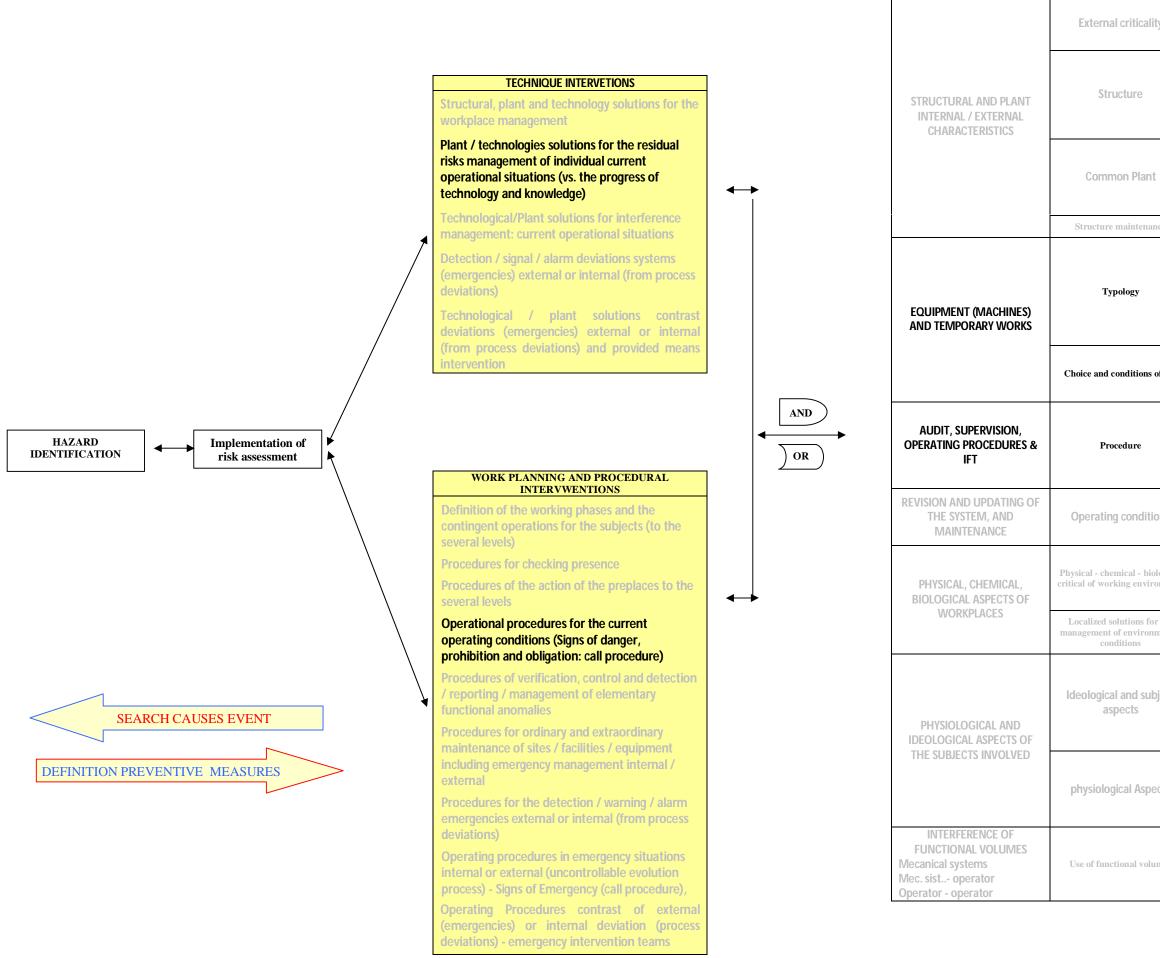
		DIRECT CAUSE
	Contact with electric current, temperature	 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot Contact with object or cold or frozen Another case involving contact with electric current, temperature
	Contact with other material or substance	 Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with material or substance
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (the result of a fall) Horizontal motion, crash on / against
AND	Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
	contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
	Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping, crushing, crushing, etc
	Physical or mental effort	 Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
	Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans

4

Distraction of right arm

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 35 ld</i> Part of body injured: right and left shinbone Type of injury: Contusion	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	NESTING, TRAPPING, CRUSHING, CRUSHING, PINCHING, ETC Constrict of whole body or of one or more parts of it – <i>linked to the Nesting in the rungs</i> <i>of the ladder portable</i>	It is necessary a suitable ladder	7
2	SLIPPING, FALLING, LOSS OF STABILITY, COLLAPSE AGENT MATERIAL - Slip, fall, loss of stability, the collapse of a material agent - at the same level – related to the fall of ladder BODY MOVEMENT WITHOUTH ANY PHYSICAL STRESS - Being grabbed, dragged, or moved by something from their momentum – related to the entrapment of the workers	It must need a suitable equipment and a procedure with information, formation and training of workers	6
3	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Typology - Work Equipment [instrumentation, equipment, localized systems of transport energy (eg. power cables,)] linked to the ladder use EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Choice and conditions of use - How to use- linked to the use of the equipment AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – Procedure – Procedure for workers – related to the absence of procedure and related IFT	Evaluation of the choice of the solutions adopted	5
4	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - related to the type of equipment AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – related to the absence of procedure	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - suitable equipment (ladder) AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – creation of procedure and formation, training of the worker	4

5.1	Equipment not suitable for the work to be done	A. Structural, plant and technology solutions for the workplace management - suitable and safety equipment	3
5.2	information, education and training Procedure of the worker	A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - related the definition of procedure and IFT	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Choice of a suitable equipment	1



	INDIRECT CAUSES OF SECOND LEVEL
	- General criticality [boundary conditions (eg.
ty	topography, climate, availability of services, sociological context)]
-)	 Specific criticality (seismicity, area exposed to floods, avalanches,)
	- General structural aspects (eg. general
	and local stability, allowable loads,
	- Specific structural Aspects [eg. Structural
	safety equipment, escape routes (eg. fire escape)
	and safe places] - Consistency with the uses
	- General Plants [eg. distribution systems
	(production) of energy, management systems of the general environmental conditions (eg,
t	heating, cooling, air exchange, lighting,),
	communication systems] - Specific Pants (systems of emergency
	management, detection, contrast and alarm)
nce	 Conservation work Participation of adaptation to the norms
	- Machine [tool, operator, auxiliary (eg.
	pollutant collection systems, cooling, heating,)]
	- Work Equipment [instrumentation,
	equipment, localized systems of transport energy (eg. power cables,)]
	 Machinery and transport equipment Devices (command and control, signaling,
	security)
	 Works provisional (eg. scaffolding,) Suitability to he development of specific
0	operations in the context
of use	- Installation - How to use
	- Maintenance status
	- Audit ; - Supervision;
	 Procedures for workers;
	 Procedures for machine operators; Procedures for personnel systems;
	 Procedures for supervisors; Procedures for special operations personnel;
	- Information, formation and Training
	 Test Verification functionality before to use
ons	- Types of maintenance applied
	- Revision - Updating systems
	- Raw materials and process products
logical	 Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous)
onment	- Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,)
	- Biological agents (eg, viruses, bacteria,)
r the	- Environmental treatment (eg. thermal insulation, acoustic,)
mental	- Lighting
	 Massing available Behaviour (available to any person to produce
	answers, determined from the environment, family regarding social situations, groups, and
oject	objects)
.j	 Position in relation to the duty cycle and the number of shifts
	- Relationships with supervisors and
	subordinates - Contract / employment
	- Age
	 Work Experience Conditions of health
ects	 Psycho-physical state (eg, depressed, sleepy, drunk, drugged,)
	- Attitude (predisposition for a particular
	mental or physical activity)
	Vehicles / machinery / plant / equipment in
imes	motion, controlled by operator Vehicles / machinery / plant / equipment,
	automated motion (controlled by PLC) Workers on the move
	workers on the move

OR

IN	DIRECT CAUSES OF FIRST LEVEL
	 Electrical problem caused by a plant failure Electrical problem caused by static electricity
Deviation due to electrical	 Electrical problem caused by missing insulation
problems, explosion, fire	- Electrical problem caused by external radiation / lightning
	- Explosion
	- Fire
	Another case relating to electrical problems, explosion, fire Solid state - overflowing, overturning
	 Sond state - overhowing, overtuining Liquid state - leaking, oozing, flowing, splashing, spraying
overflow, overturn, leak, flow,	- Gaseous state - vaporisation, aerosol formation, gas formation
vaporisation, emission	- Pulverulent material - smoke generation, dust/particles in
	suspension/emission of
	 Another case relating to overflow, overturn, leak, flow, vaporisation, emission
	- Break of material, at junctions, connections, material agent
Breakage, bursting, splitting,	- Break / release of personal protective equipment
slipping, fall, collapse of Material	- Break with explosion of splinters (wood, glass, metal, stone,
Agent	plastic, etc.) agent material
	 Another case involving rupture, fracture, rupture violent. sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
	above (which falls on the victim)
Slipping, falling, loss of stability,	- Sliding, fall, loss of stability, collapse of agent material placed
collapse agent material	below (which drags the victim) Slip foll loss of stability, the colleges of a metavial event
·····	 Slip, fall, loss of stability, the collapse of a material agent - at the same level
	- Another case relating to slipping, falling, loss of stability.
	collapse agent material
	- Problems of total or partial control of the machine (including
	the unintended equipment) as well as the processed material
	 Problems of total or partial control of the means of transport / equipment material handling and / or substance (motorized or
	not)
Loss of control (total or partial) of	- Problems of total or partial control of a means of transport
machine, means of transport or	handling of people and / or animals
handling equipment, hand-held	- Problems of total or partial control of hand tool (motorized or
tool, object, animal	not) as well as the material machined by Problems of total or partial control of object (led, moved.
	moved, etc.).
	- Problems of total or partial control of animal
	- Another cause of problems related to total or partial control of
	machinery, transportation / handling equipment, hand tools or
	objects, animals - Fall of person from the top through the opening
	 Slipping or tripping - with the fall of man - from
	- Slipping or tripping - with the fall of person - at the same level
Slipping - Stumbling and falling -	- Loss of balance - with the fall of man - from
Fall of persons	- Loss of balance - with the fall of person - at the same level
	- Slipping or tripping on machinery
	 Another case involving slipping or tripping, loss of balance - with the fall of person
	- Walking on a sharp object
	- Kneel, sit, lean against
Body movement without any	- Being grabbed, dragged, or moved by something from their
physical stress	momentum
F	 Uncoordinated movements, gestures, inopportune inappropriate
	- Another cause relative movement of the body without physical
	exertion (which usually leads to an external injury)
	- Lifting, carrying or standing
	- Pushing, pulling, pulling
Body movement under or with	- Depositing, dropping
physical stress	 Twisting, turning Step false twisting of the leg or ankle, slipping without falling
	 Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physical
	exertion (which usually leads to an internal injury)
	- Surprise, fear
	- Violence, aggression, threat - including employees of the
	- Violence, aggression, threat-from people external to the
Shock, fright, violence, aggression,	company to the victims in the context of their function (bank
threat, presence	robbery, assaulting bus drivers, etc.).
177 £ 111 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	 Aggression, mobs, violence by animals Presence of the victim or a third party that creates in itself a
	 Tresence of the victim of a tinfu party that creates in itself at danger to the victim / for himself and if any other
	- Another case involving surprise, fright, violence, aggression,
	threat, presence

	D	NRECT CAUSE
	Contact with electric current, temperature	 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot Contact with object or cold or frozen Another case involving contact with electric current, temperature
	Contact with other material or substance	 Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with material or substance
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (the result of a fall) Horizontal motion, crash on / against Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion)
AND	Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
	contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
	Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping, crushing, crushing, pinching, etc
	Physical or mental effort	 Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
	Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans

TYPE ((medical Cont right

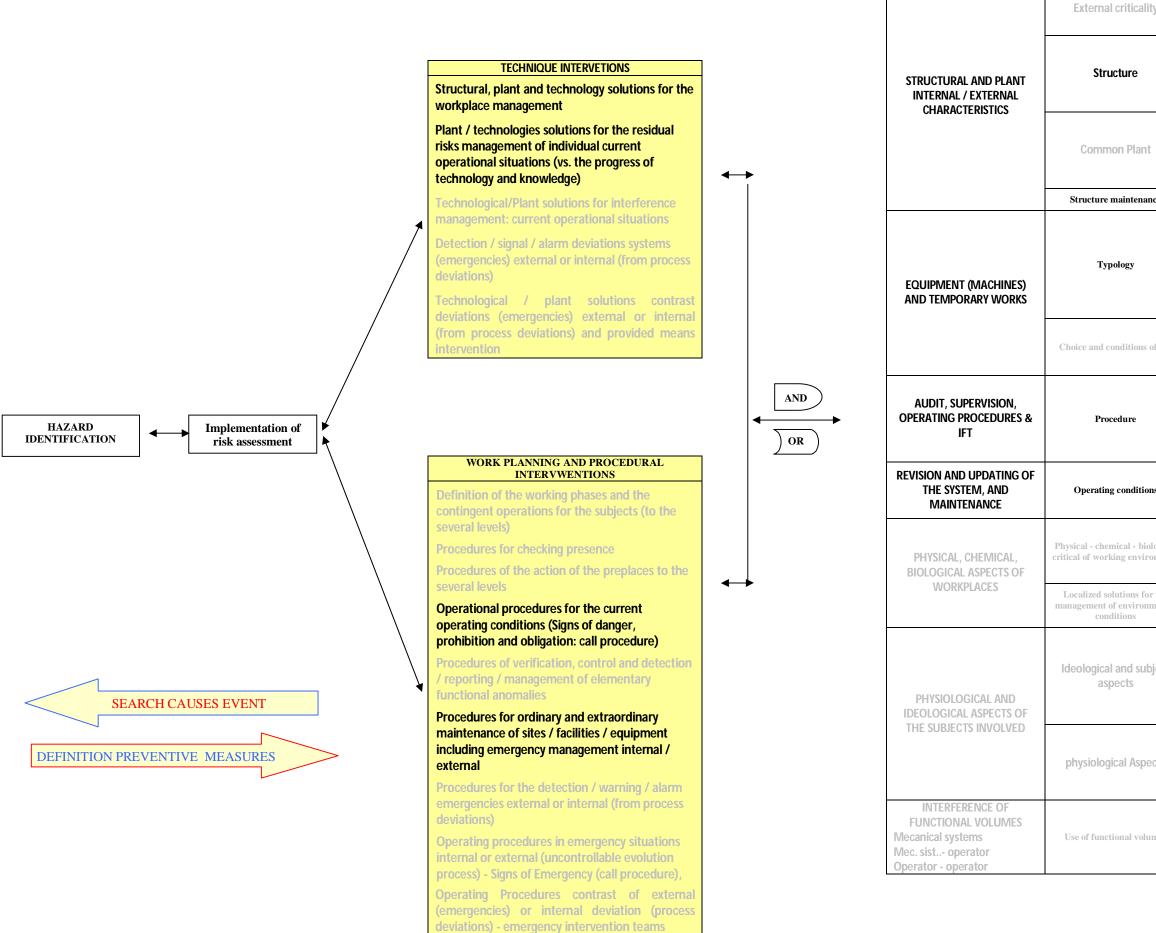
SEVERITY and TYPE OF INJURY (medical report data)

Contusion of right and left shinbone

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 35 Id</i> Part of body injured: shoulder and neck Type of injury: Contusion	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	STRUCK BY MOVING OBJECT, COLLISIONS WITH - Struck by object projected – linked to the impact of the cab of the forklift against the operator	It is necessary a suitable cab and a procedure for maintenance	7
2	SLIPPING, FALLING, LOSS OF STABILITY, COLLAPSE AGENT MATERIAL - Slip, fall, loss of stability, the collapse of a material agent - at the same level – related to the loss of the control of the cab LOSS OF CONTROL (TOTAL OR PARTIAL) OF MACHINE, MEANS OF TRANSPORT OR HANDLING EQUIPMENT, HAND-HELD TOOL, OBJECT, ANIMAL - Problems of total or partial control of the means of transport / equipment material handling and / or substance (motorized or not) – related to the loss of the control of the forklift	It must need a safety cab of the forklift	6

3	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – Structure - General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,) linked to the floor STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – Structure Maintenance – Conservation work linked to the state of repair of the floor EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Typology - Machinery and transport equipment linked to the forklift EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Choice and conditions of use - How to use- linked to the use of the forklift AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – Procedure – Procedure for workers – related to the absence of procedure and related IFT REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – Operating condition - Verification functionality before to use linked to the control to do before the use of the forklift	Evaluation of the choice of the solutions adopted	5
4	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - <i>related to the work environment</i>	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – maintenance of the floor of work environment	
	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - related to the type of forklift	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - suitable forklift	
	AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – related to the absence of procedure	AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – creation of procedure and formation, training of the worker	4
	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE - <i>related to the control to do before the use of the forklift</i>	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – procedure of control for the use of the forklift	

5.1	Not safety device of the cab of the forklift Bad maintenance of the floor of the work environment	 A. Structural, plant and technology solutions for the workplace management - maintenance of the work environment B. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - suitable and safety forklift 	3
5.2	information, education and training Procedure of the worker	 A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - related the definition of procedure and IFT B. Procedures for ordinary and extraordinary maintenance of sites / facilities / equipment including emergency management internal / external - related the definition of procedure and IFT 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Choice of a suitable forklift and definition of a maintenance procedure for equipment and work environment	1



	INDIRECT CAUSES OF SECOND LEVEL
	- General criticality [boundary conditions (eg.
ity	topography, climate, availability of services, sociological context)]
2	- Specific criticality (seismicity, area exposed to floods, avalanches,)
	 General structural aspects (eg. general and local stability, allowable loads, materials,
	local stability, allowable loads, materials, quality, efficiency,)
	 Specific structural Aspects [eg, Structural safety equipment, escape routes (eg fire escape)
	and safe places]
	Consistency with the uses General Plants [eg. distribution systems
	(production) of energy, management systems
t	of the general environmental conditions (eg, heating, cooling, air exchange, lighting,),
	communication systems]
	- Specific Pants (systems of emergency management, detection, contrast and alarm)
nce	- Conservation work
	 Participation of adaptation to the norms Machine [tool, operator, auxiliary (eg.
	pollutant collection systems, cooling, heating,)]
	- Work Equipment [instrumentation,
	equipment, localized systems of transport energy (eg. power cables,)]
	 Machinery and transport equipment
	- Devices (command and control, signaling, security)
	- Works provisional (eg. scaffolding,)
	- Suitability to he development of specific operations in the context
of use	- Installation - How to use
	- Maintenance status
	- Audit ;
	 Supervision; Procedures for workers;
	 Procedures for machine operators; Procedures for personnel systems;
	- Procedures for supervisors;
	 Procedures for special operations personnel; Information, formation and Training
	Test Verification functionality before to use
ns	- Types of maintenance applied
	 Revision Updating systems
	- Raw materials and process products
ological	 Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous)
onment	- Physical pollutants (eg noise, vibration,
	electromagnetic fields and radiation,) - Biological agents (eg, viruses, bacteria,)
or the	- Environmental treatment (eg. thermal insulation, acoustic,)
mental	- Lighting
	 Massing available Behaviour (available to any person to produce
	answers, determined from the environment,
bject	family regarding social situations, groups, and objects)
oject	 Position in relation to the duty cycle and the number of shifts
	- Relationships with supervisors and
	subordinates - Contract / employment
	- Age
	 Work Experience Conditions of health
ects	- Psycho-physical state (eg, depressed, sleepy,
	drunk, drugged,) - Attitude (predisposition for a particular
	mental or physical activity)
	Vehicles / machinery / plant / equipment in
imes	motion, controlled by operator Vehicles / machinery / plant / equipment,
	automated motion (controlled by PLC) Workers on the move
	tromers on the more

OR

IN	DIRECT CAUSES OF FIRST LEVEL Electrical problem caused by a plant failure
	 Electrical problem caused by a plant failure Electrical problem caused by static electricity
Deviation due to electrical	- Electrical problem caused by missing insulation
problems, explosion, fire	- Electrical problem caused by external radiation / lightning
	- Explosion
	 Fire Another case relating to electrical problems, explosion, fire
	 Solid state - overflowing, overturning
	 Liquid state - leaking, oozing, flowing, splashing, spraying
overflow, overturn, leak, flow,	- Gaseous state - vaporisation, aerosol formation, gas formation
vaporisation, emission	- Pulverulent material - smoke generation, dust/particles in
	suspension/emission of - Another case relating to overflow, overturn, leak, flow
	- Another case relating to overflow, overfurn, leak, now vaporisation, emission
	- Break of material, at junctions, connections, material agent
Breakage, bursting, splitting,	- Break / release of personal protective equipment
slipping, fall, collapse of Material	- Break with explosion of splinters (wood, glass, metal, stone
Agent	plastic, etc.) agent material
	 Another case involving rupture, fracture, rupture violent sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
	above (which falls on the victim)
Slipping falling loss of stability	- Sliding, fall, loss of stability, collapse of agent material placed
Slipping, falling, loss of stability, collapse agent material	below (which drags the victim)
compose agent materian	 Slip, fall, loss of stability, the collapse of a material agent - at the same level
	- Another case relating to slipping, falling, loss of stability
	collapse agent material
	- Problems of total or partial control of the machine (including
	the unintended equipment) as well as the processed material
	 Problems of total or partial control of the means of transport a equipment material handling and / or substance (motorized or
	not)
Loss of control (total or partial) of	 Problems of total or partial control of a means of transport
machine, means of transport or	handling of people and / or animals
handling equipment, hand-held	- Problems of total or partial control of hand tool (motorized or
tool, object, animal	not) as well as the material machined by
	 Problems of total or partial control of object (led, moved moved, etc.).
	 Problems of total or partial control of animal
	 Another cause of problems related to total or partial control of
	machinery, transportation / handling equipment, hand tools or
	objects, animals
	- Fall of person from the top through the opening
	 Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level
Slipping - Stumbling and falling -	 Suppling of tripping - with the fall of person - at the same level Loss of balance - with the fall of man - from
Fall of persons	- Loss of balance - with the fall of person - at the same level
	- Slipping or tripping on machinery
	- Another case involving slipping or tripping, loss of balance
	with the fall of person Walking on a sharp object
	 Walking on a sharp object Kneel, sit, lean against
	 Being grabbed, dragged, or moved by something from their
Body movement without any	momentum
physical stress	- Uncoordinated movements, gestures, inopportune
	inappropriate
	 Another cause relative movement of the body without physica exertion (which usually leads to an external injury)
	Lifting, carrying or standing
	 Pushing, pulling, pulling
Body movement under or with	- Depositing, dropping
physical stress	- Twisting, turning, turning
	- Step false twisting of the leg or ankle, slipping without falling
	 Another cause relative movement of the body during physica exertion (which usually leads to an internal injury)
	- Surprise, fear
	 Surprise, real Violence, aggression, threat - including employees of the
	- Violence, aggression, threat-from people external to the
	company to the victims in the context of their function (bank
Shock, fright, violence, aggression, threat, presence	robbery, assaulting bus drivers, etc.).
	- Aggression, mobs, violence by animals
	- Presence of the victim or a third party that creates in itself a
	danger to the victim / for himself and if any other
	- Another case involving surprise, fright, violence, aggression

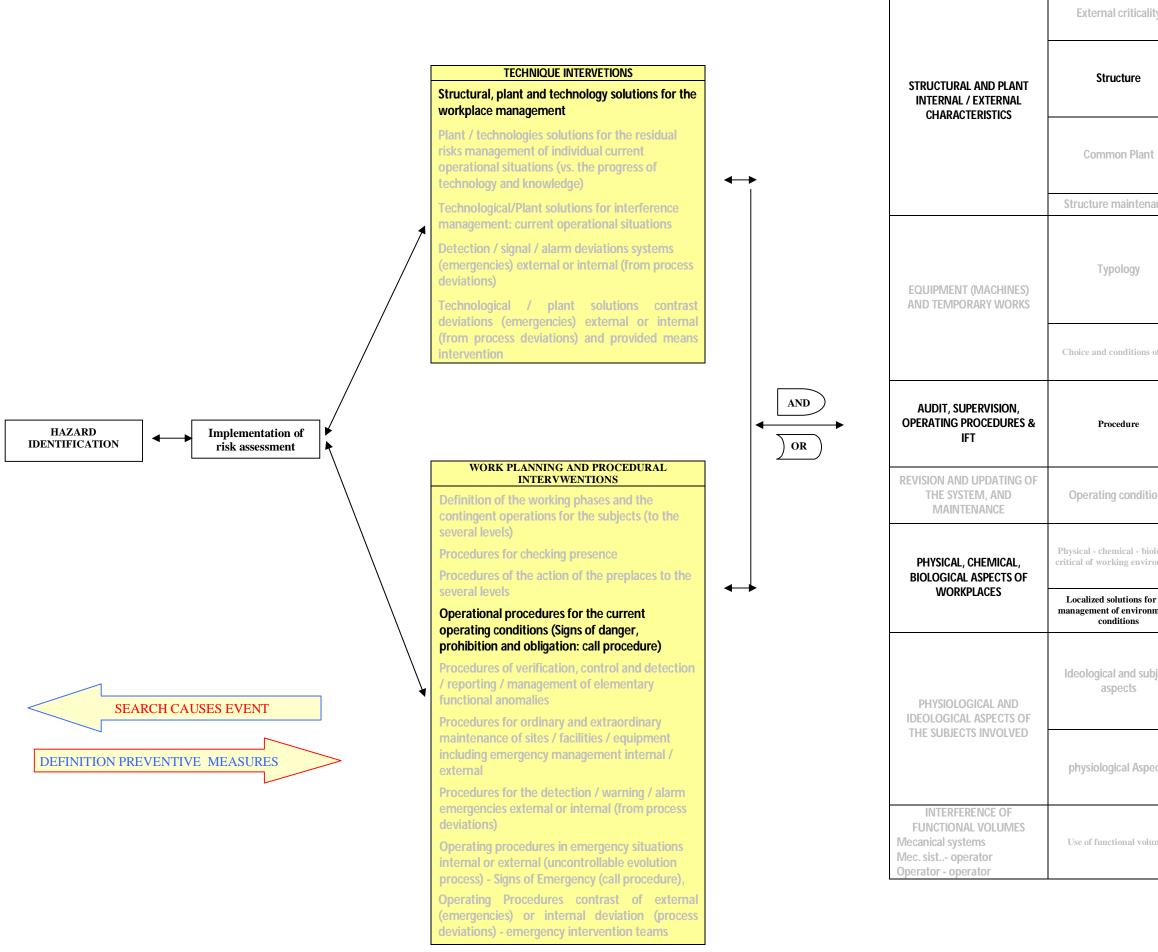
]	DIRECT CAUSE
	Contact with electric current, temperature	 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot Contact with object or cold or frozen Another case involving contact with electric current, temperature
	Contact with other material or substance	 Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with material or substance
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (the result of a fall) Horizontal motion, crash on / against Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion)
AND	Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
	contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
	Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping, crushing, crushing, pinching, etc
	Physical or mental effort	 Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
	Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans

4

Contusion on shoulder and neck

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 35 ld</i> Part of body injured: Elbow Type of injury: Fracture	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	CRUSHING VERTICALLY AND / OR HORIZONTALLY MOVING, FALL ON / AGAINST AN IMMOVABLE OBJECT / GROUND (VICTIM IN MOTION)- Vertical motion, crash on / against (the result of a fall) – linked to the collision of the worker against the ground	It is necessary a pedestrian path or a storage area for materials	7
2	SLIPPING - STUMBLING AND FALLING - FALL OF PERSONS Slipping or tripping - with the fall of person - at the same level – related to the fall of the worker BODY MOVEMENT WITHOUT ANY PHYSICAL STRESS - Uncoordinated movements, gestures, inopportune, inappropriate – related to the uncoordinated movements of the workers	It must need a pedestrian path	6
3	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – Structure - General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,) linked to the pedestrian path across the ward continuous casting AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – Procedure – Procedure for workers – related to the absence of procedure and related IFT PHYSICAL, CHEMICAL, BIOLOGICAL ASPECTS OF WORKPLACES – Localized solutions for the management of environmental conditions - linked to the management of the areas	Evaluation of the choice of the solutions adopted	5

4	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - related to the work environment AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – related to the absence of procedure PHYSICAL, CHEMICAL, BIOLOGICAL ASPECTS OF WORKPLACES - related to the bad management of the areas	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – creation of pedestrian path AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – creation of procedure and formation, training of the worker PHYSICAL, CHEMICAL, BIOLOGICAL ASPECTS OF WORKPLACES – better maintenance of the areas	4
5.1	Bad maintenance of the work environment (pedestrian path)	A. Structural, plant and technology solutions for the workplace management - management of the areas and creation of pedestrian path	3
5.2	information, education and training Procedure of the worker	A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - related the definition of procedure and IFT	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Better management of areas and creation of a pedestrian path	1



	INDIRECT CAUSES OF SECOND LEVEL
	General criticality [boundary conditions (eg.
ty	topography, climate, availability of services, sociological context)]
- 5	 Specific criticality (seismicity, area exposed to floods, avalanches,)
	- General structural aspects (eg. general and local stability allowable locads metazials
	local stability, allowable loads, materials, quality, efficiency,)
	- Specific structural Aspects [eg. Structural
	safety equipment, escape routes (eg fire escape) and safe places]
	- Consistency with the uses
	- General Plants [eg. distribution systems (production) of energy, management systems
	of the general environmental conditions (eg, heating, cooling, air exchange, lighting,),
	communication systems]
	- Specific Pants (systems of emergency management, detection, contrast and alarm)
ance	 Conservation work
diffee	 Participation of adaptation to the norms Machine [tool, operator, auxiliary (eg.
	- Machine [tool, operator, auxiliary (eg. pollutant collection systems, cooling, heating,
	- Work Equipment [instrumentation,
	equipment, localized systems of transport
	energy (eg. power cables,)] - Machinery and transport equipment
	- Devices (command and control, signaling,
	security) - Works provisional (eg. scaffolding,)
	- Suitability to he development of specific
of use	operations in the context - Installation
or use	- How to use
	Maintenance status Audit :
	- Supervision;
	 Procedures for workers; Procedures for machine operators;
	- Procedures for personnel systems;
	 Procedures for supervisors; Procedures for special operations personnel;
	- Information, formation and Training
	 Test Verification functionality before to use
ons	- Types of maintenance applied
	- Revision - Updating systems
	- Raw materials and process products
ological	 Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous)
onment	- Physical pollutants (eg noise, vibration,
	 electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,)
r the	- Environmental treatment (eg. thermal
mental	insulation, acoustic,) - Lighting
	- Massing available
	- Behaviour (available to any person to produce answers, determined from the environment,
	family regarding social situations, groups, and objects)
oject	- Position in relation to the duty cycle and the
	number of shifts - Relationships with supervisors and
	subordinates
	- Contract / employment - Age
	- Work Experience
ects	 Conditions of health Psycho-physical state (eg, depressed, sleepy,
	drunk, drugged,)
	 Attitude (predisposition for a particular mental or physical activity)
	Vehicles / machinery / plant / equipment in motion, controlled by operator
imes	Vehicles / machinery / plant / equipment, automated motion (controlled by PLC)
	Workers on the move

OR

	DIRECT CAUSES OF FIRST LEVEL - Electrical problem caused by a plant failure
	 Electrical problem caused by a plant rantife Electrical problem caused by static electricity
Deviation due to electrical	- Electrical problem caused by missing insulation
problems, explosion, fire	- Electrical problem caused by external radiation / lightning
	- Explosion - Fire
	 Fire Another case relating to electrical problems, explosion, fire
	- Solid state - overflowing, overturning
	- Liquid state - leaking, oozing, flowing, splashing, spraying
overflow, overturn, leak, flow,	- Gaseous state - vaporisation, aerosol formation, gas formation
vaporisation, emission	 Pulverulent material - smoke generation, dust/particles in suspension/emission of
	- Another case relating to overflow, overturn, leak, flow,
	vaporisation, emission
	- Break of material, at junctions, connections, material agent
Breakage, bursting, splitting,	- Break / release of personal protective equipment
slipping, fall, collapse of Material	 Break with explosion of splinters (wood, glass, metal, stone, plastic, etc.) agent material
Agent	- Another case involving rupture, fracture, rupture violent,
	sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
	above (which falls on the victim)
Slipping, falling, loss of stability,	- Sliding, fall, loss of stability, collapse of agent material placed
collapse agent material	 below (which drags the victim) Slip, fall, loss of stability, the collapse of a material agent - at
* ~	- Sup, rail, loss of stability, the compse of a material agent - at the same level
	- Another case relating to slipping, falling, loss of stability,
	collapse agent material
	- Problems of total or partial control of the machine (including
	the unintended equipment) as well as the processed material Purklame of total and activity output of the means of two protocols
	 Problems of total or partial control of the means of transport / equipment material handling and / or substance (motorized or
	equipment material handling and / or substance (motorized or not)
Loss of control (total or partial) of	- Problems of total or partial control of a means of transport /
machine, means of transport or	handling of people and / or animals
handling equipment, hand-held	- Problems of total or partial control of hand tool (motorized or
tool, object, animal	not) as well as the material machined by
	 Problems of total or partial control of object (led, moved, moved, etc.).
	 Problems of total or partial control of animal
	 Another cause of problems related to total or partial control of
	machinery, transportation / handling equipment, hand tools or
	objects, animals
	- Fall of person from the top through the opening
	 Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level
Slipping - Stumbling and falling -	 Suppling or tripping - with the fall of person - at the same level Loss of balance - with the fall of man - from
Fall of persons	- Loss of balance - with the fall of person - at the same level
	- Slipping or tripping on machinery
	- Another case involving slipping or tripping, loss of balance -
	with the fall of person
	 Walking on a sharp object Kneel, sit, lean against
	 Kneel, sit, iean against Being grabbed, dragged, or moved by something from their
Body movement without any	momentum
physical stress	- Uncoordinated movements, gestures, inopportune,
	inappropriate
	- Another cause relative movement of the body without physical
	exertion (which usually leads to an external injury) - Lifting, carrying or standing
	 Litting, carrying or standing Pushing, pulling, pulling
Body movement under or with	- Depositing, dropping
physical stress	- Twisting, turning, turning
Σ. Ψ	- Step false twisting of the leg or ankle, slipping without falling
	- Another cause relative movement of the body during physical
	exertion (which usually leads to an internal injury)
	- Surprise, fear Violance aggression threat including amplayees of the
	 Violence, aggression, threat - including employees of the Violence, aggression, threat-from people external to the
	- violence, aggression, threat-from people external to the company to the victims in the context of their function (bank
Shock, fright, violence, aggression,	robbery, assaulting bus drivers, etc.).
threat, presence	- Aggression, mobs, violence by animals
	- Presence of the victim or a third party that creates in itself a
	danger to the victim / for himself and if any other
	 Another case involving surprise, fright, violence, aggression, threat, presence

		DIRECT CAUSE
	Contact with electric current, temperature	 Indirect contact with the electrical circuit lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red hot Contact with object or cold or frozen Another case involving contact with electric current, temperature
	Contact with other material or substance	 Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances throug the skin or eyes Contact with hazardous substances throug the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with materia or substance
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (th result of a fall) Horizontal motion crash on / against
AND	Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motior displacement, including vehicles Collision with a moving object, includin vehicles - a collision with a person (th victim is moving) Another case involving a collision by movin object, collision with
	contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife blade) Contact with a sharp Material Agent (nail sharp tool) Contact agent with hard or abrasiv material Another case concerning materials is contact with agent edgy, sharp, hard abrasive
	Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, finger or more parts of the body Constrict of whole body or of one or mor parts of it By pinching Another case involving nesting, trapping crushing, crushing, pinching, etc.,
	Physical or mental effort	 Physical effort at the expense of th musculoskeletal system Physical exertion caused by radiation, noise light, pressure Effort psychic, mental shock Another case involving mental or physica effort
	Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., b animals or humans

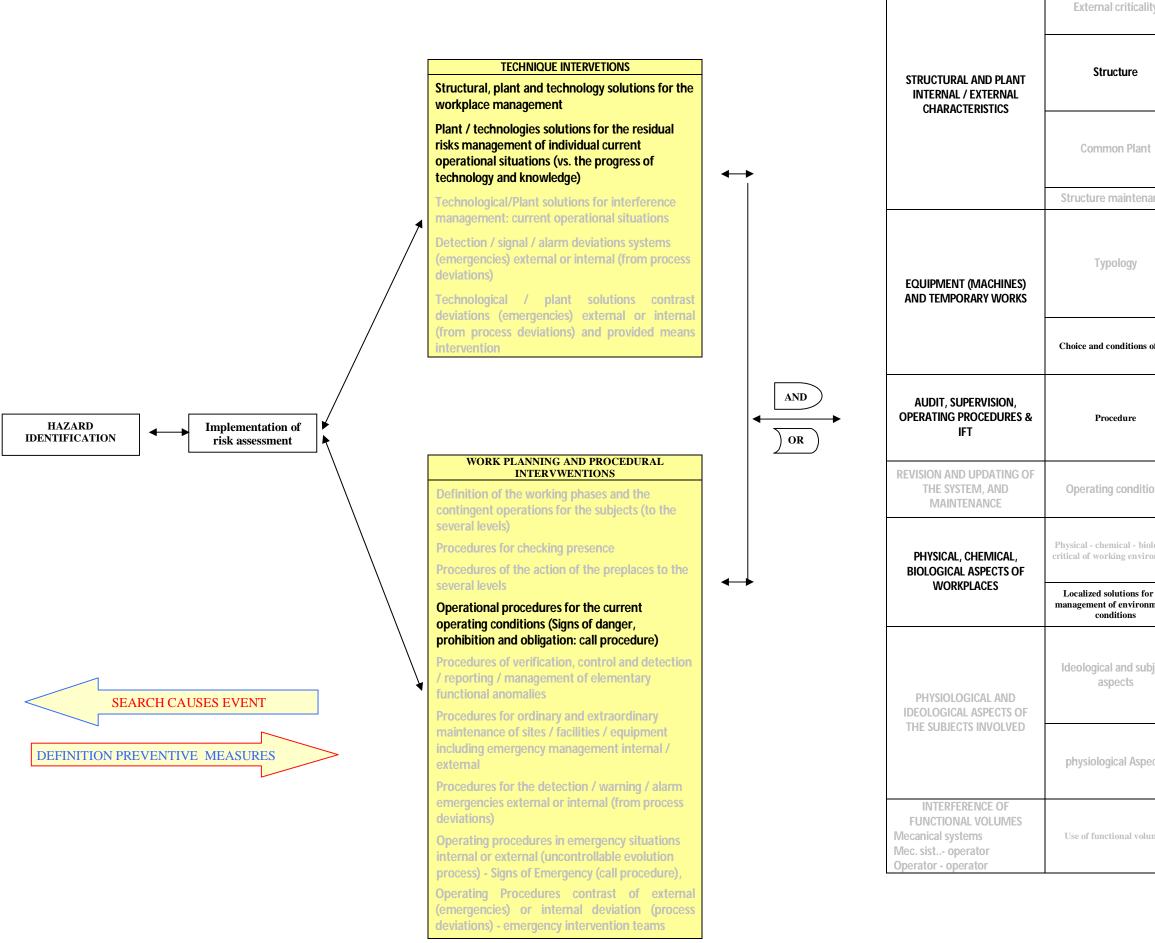
4

Fracture of elbow

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 20 Id</i> Part of body injured: right wrist Type of injury: Contusion	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	CRUSHING VERTICALLY AND / OR HORIZONTALLY MOVING, FALL ON / AGAINST AN IMMOVABLE OBJECT / GROUND (VICTIM IN MOTION)- Horizontal motion, crash on / against – linked to the collision of the worker wrist against a part of the ladle	It is necessary a work environment suitable and a work procedure	7
2	BODY MOVEMENT UNDER OR WITH PHYSICAL STRESS - Lifting, carrying or standing – related to the uncoordinated movements of the workers	It must need a suitable work area	6
3	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – Structure - General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,) linked to the work area EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Choice and conditions of use – How to use - – related to the use of the equipment AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – Procedure – Procedure for workers – related to the absence of procedure and related IFT PHYSICAL, CHEMICAL, BIOLOGICAL ASPECTS OF WORKPLACES – Localized solutions for the management of environmental conditions - linked to the management of the areas	Evaluation of the choice of the solutions adopted	5

4	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - related to the work environment EQUIPMENT (MACHINES) AND TEMPORARY WORKS - related to the equipment used AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – related to the absence of procedure PHYSICAL, CHEMICAL, BIOLOGICAL ASPECTS OF WORKPLACES - related to the bad management of the areas	 STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – creation of a suitable work area EQUIPMENT (MACHINES) AND TEMPORARY WORKS – suitable equipment for the lift of the materials AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – creation of procedure and formation, training of the worker PHYSICAL, CHEMICAL, BIOLOGICAL ASPECTS OF WORKPLACES – better maintenance of the areas 	4
5.1	Bad management of the work environment Not suitable equipment	 A. Structural, plant and technology solutions for the workplace management - management of the areas B. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - choice of a suitable euipment 	3
5.2	information, education and training Procedure of the worker	A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - related the definition of procedure and IFT	2

6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Better management of areas and choice of a suitable equipment	1
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	INDIRECT CAUSES OF SECOND LEVEL
	General criticality [boundary conditions (eg.
ty	topography, climate, availability of services, sociological context)]
- 5	 Specific criticality (seismicity, area exposed to floods, avalanches,)
	- General structural aspects (eg. general and local stability allowable locads metazials
	local stability, allowable loads, materials, quality, efficiency,)
	 Specific structural Aspects [eg. Structural safety equipment, escape routes (eg fire escape)
	and safe places]
	Consistency with the uses General Plants [eg. distribution systems
	(production) of energy, management systems
t	of the general environmental conditions (eg, heating, cooling, air exchange, lighting,),
	communication systems]
	- Specific Pants (systems of emergency management, detection, contrast and alarm)
ance	- Conservation work
	 Participation of adaptation to the norms Machine [tool, operator, auxiliary (eg.
	pollutant collection systems, cooling, heating,
	- Work Equipment [instrumentation,
	equipment, localized systems of transport energy (eg. power cables,)]
	- Machinery and transport equipment
	 Devices (command and control, signaling, security)
	- Works provisional (eg. scaffolding,)
	- Suitability to he development of specific operations in the context
of use	- Installation - How to use
	- Maintenance status
	- Audit ;
	 Supervision; Procedures for workers;
	 Procedures for machine operators; Procedures for personnel systems;
	- Procedures for supervisors;
	 Procedures for special operations personnel; Information, formation and Training
	- Test
ons	 Verification functionality before to use Types of maintenance applied
	- Revision - Updating systems
	 Raw materials and process products
logical	 Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous)
onment	- Physical pollutants (eg noise, vibration,
	 electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,)
r the	- Environmental treatment (eg. thermal
mental	insulation, acoustic,) - Lighting
	Massing available Behaviour (available to any person to produce
	answers, determined from the environment,
oject	family regarding social situations, groups, and objects)
Jeer	 Position in relation to the duty cycle and the number of shifts
	- Relationships with supervisors and
	subordinates - Contract / employment
	- Age
	 Work Experience Conditions of health
ects	- Psycho-physical state (eg, depressed, sleepy,
	drunk, drugged,) - Attitude (predisposition for a particular
	mental or physical activity)
	Vehicles / machinery / plant / equipment in
imes	motion, controlled by operator Vehicles / machinery / plant / equipment,
	automated motion (controlled by PLC)
	Workers on the move

OR

IN	IDIRECT CAUSES OF FIRST LEVEL
	 Electrical problem caused by a plant failure Electrical problem caused by static electricity
Deviation due to electrical	- Electrical problem caused by missing insulation
problems, explosion, fire	- Electrical problem caused by external radiation / lightning
	- Explosion - Fire
	 Fire Another case relating to electrical problems, explosion, fire
	- Solid state - overflowing, overturning
	- Liquid state - leaking, oozing, flowing, splashing, spraying
overflow, overturn, leak, flow,	- Gaseous state - vaporisation, aerosol formation, gas formation
vaporisation, emission	 Pulverulent material - smoke generation, dust/particles in suspension/emission of
	- Another case relating to overflow, overturn, leak, flow,
	vaporisation, emission
	- Break of material, at junctions, connections, material agent
Breakage, bursting, splitting,	 Break / release of personal protective equipment Break with explosion of splinters (wood, glass, metal, stone,
slipping, fall, collapse of Material Agent	plastic, etc.) agent material
	- Another case involving rupture, fracture, rupture violent,
	sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
	 above (which falls on the victim) Sliding, fall, loss of stability, collapse of agent material placed
Slipping, falling, loss of stability,	below (which drags the victim)
collapse agent material	- Slip, fall, loss of stability, the collapse of a material agent - at
	the same level
	 Another case relating to slipping, falling, loss of stability, collapse agent material
	- Problems of total or partial control of the machine (including
	the unintended equipment) as well as the processed material
	- Problems of total or partial control of the means of transport /
	equipment material handling and / or substance (motorized or
Loss of control (total or partial) of	 not) Problems of total or partial control of a means of transport /
machine, means of transport or	handling of people and / or animals
handling equipment, hand-held	- Problems of total or partial control of hand tool (motorized or
tool, object, animal	not) as well as the material machined by
	 Problems of total or partial control of object (led, moved, moved, etc.).
	 Problems of total or partial control of animal
	- Another cause of problems related to total or partial control of
	machinery, transportation / handling equipment, hand tools or
	objects, animals
	 Fall of person from the top through the opening Slipping or tripping - with the fall of man - from
	- Slipping or tripping - with the fall of person - at the same level
Slipping - Stumbling and falling - Fall of persons	- Loss of balance - with the fall of man - from
r an or persons	- Loss of balance - with the fall of person - at the same level
	 Slipping or tripping on machinery Another case involving slipping or tripping, loss of balance -
	 Another case involving suppling or tripping, loss of barance - with the fall of person
	- Walking on a sharp object
	- Kneel, sit, lean against
Body movement without any	- Being grabbed, dragged, or moved by something from their momentum
physical stress	- Uncoordinated movements, gestures, inopportune,
	inappropriate
	- Another cause relative movement of the body without physical
	exertion (which usually leads to an external injury)
	Lifting, carrying or standing Pushing, pulling, pulling
Body movement under or with	- Depositing, dropping
physical stress	- Twisting, turning,
	- Step false twisting of the leg or ankle, slipping without falling
	 Another cause relative movement of the body during physical exertion (which usually leads to an internal injury)
	- Surprise, fear
	 Surprise, rear Violence, aggression, threat - including employees of the
	- Violence, aggression, threat-from people external to the
Shock, fright, violence, aggression,	company to the victims in the context of their function (bank
threat, presence	robbery, assaulting bus drivers, etc.).
/ ± · ·	 Aggression, mobs, violence by animals Presence of the victim or a third party that creates in itself a
	danger to the victim / for himself and if any other
	- Another case involving surprise, fright, violence, aggression,
	threat, presence

		DIRECT CAUSE
	Contact with electric current, temperature	 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot Contact with object or cold or frozen Another case involving contact with electric
	Contact with other material or substance	 current, temperature Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with material or substance
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (the result of a fall) Horizontal motion, crash on / against Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion)
AND	Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
	contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
	Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping, crushing, crushing, pinching, etc
	Physical or mental effort	 Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
	Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans

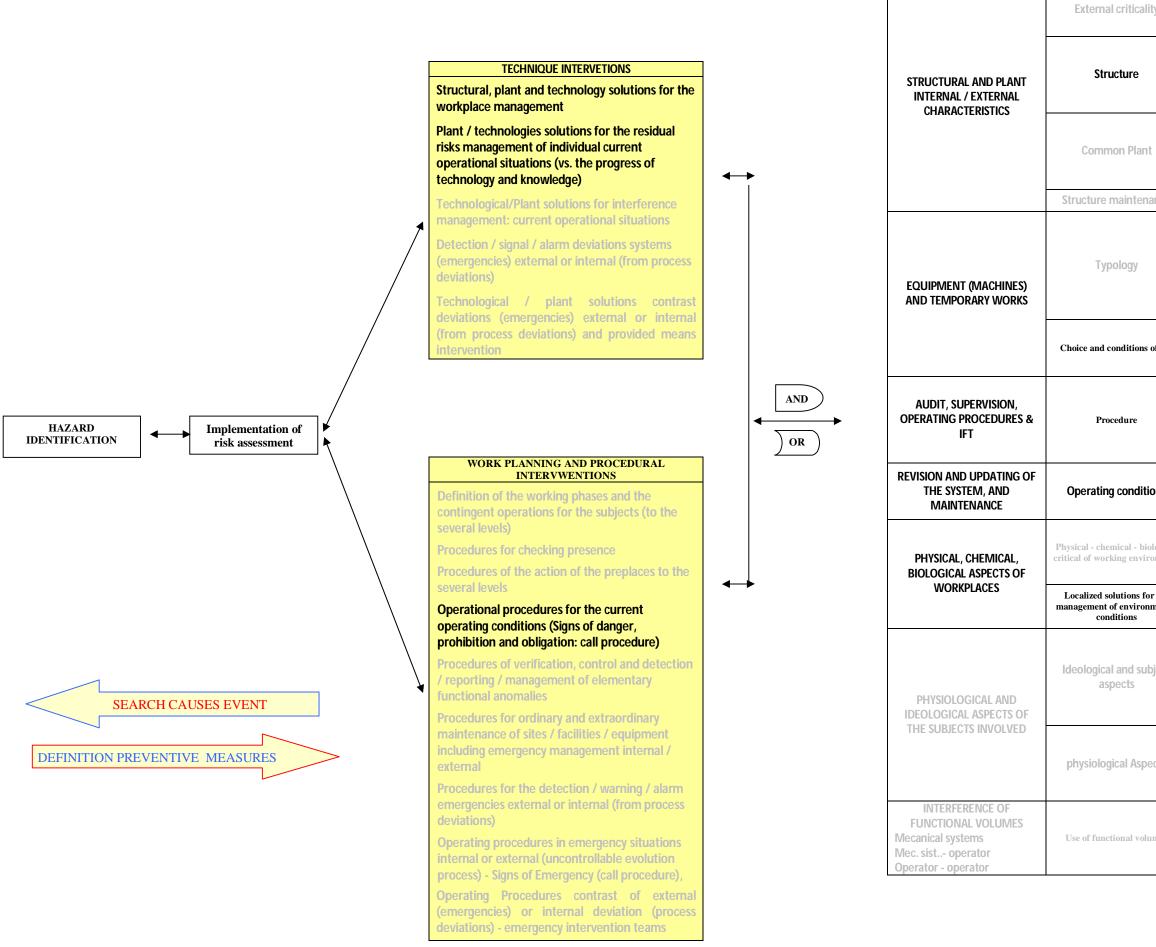
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Contusion on right wrist

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 20 Id</i> Part of body injured: right wrist Type of injury: Contusion	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would not solve the problem	
1	CRUSHING VERTICALLY AND / OR HORIZONTALLY MOVING, FALL ON / AGAINST AN IMMOVABLE OBJECT / GROUND (VICTIM IN MOTION)- Horizontal motion, crash on / against – linked to the collision of the worker wrist against a part of the ladle	It is necessary a suitable equipment and a work procedure	7
2	LOSS OF CONTROL (TOTAL OR PARTIAL) OF MACHINE, MEANS OF TRANSPORT OR HANDLING EQUIPMENT, HAND-HELD TOOL, OBJECT, ANIMAL - Problems of total or partial control of hand tool (motorized or not) as well as the material machined by – related to the loss of control of the equipment BODY MOVEMENT UNDER OR WITH PHYSICAL STRESS - Lifting, carrying or standing – related to the movements of the workers for for loading of the tray	It must need a suitable equipment and work area	6

3	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – Structure - General structural aspects (eg. general and local stability, allowable loads, materials, quality, efficiency,) linked to the work area EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Choice and conditions of use – How to use - – related to the use of the equipment AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – Procedure – Procedure for workers – related to the absence of procedure and related IFT REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – Operating condition - Verification functionality before to use linked to the control to do before the use of the equipment PHYSICAL, CHEMICAL, BIOLOGICAL ASPECTS OF WORKPLACES – Localized solutions for the management of environmental conditions - linked to the management of the areas	Evaluation of the choice of the solutions adopted	5
	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - related to the work environment	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – creation of a suitable work area	
4	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - related to the equipment used	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – suitable equipment for the lift of the materials	
	AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – related to the absence of procedure	AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – creation of procedure and formation, training of the worker	4
	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – related to the check to do on the equipment	REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – creation of a control procedure for the use of equipment	
	PHYSICAL, CHEMICAL, BIOLOGICAL ASPECTS OF WORKPLACES - related to the bad management of the areas	PHYSICAL, CHEMICAL, BIOLOGICAL ASPECTS OF WORKPLACES – better maintenance of the areas	

5.1	Bad management of the work environment Not suitable equipment	 A. Structural, plant and technology solutions for the workplace management - management of the areas B. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - choice of a suitable equipment 	3
5.2	information, education and training Procedure of the worker	A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - related the definition of procedure and IFT	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Better management of areas and choice of a suitable equipment	1



	INDIRECT CAUSES OF SECOND LEVEL
	General criticality [boundary conditions (eg.
ty	topography, climate, availability of services, sociological context)]
	 Specific criticality (seismicity, area exposed to floods, avalanches,)
	- General structural aspects (eg. general and
	local stability, allowable loads, materials, quality, efficiency,)
	 Specific structural Aspects [eg. Structural safety equipment, escape routes (eg fire escape)
	and safe places]
	Consistency with the uses General Plants [eg. distribution systems
	(production) of energy, management systems
t	of the general environmental conditions (eg, heating, cooling, air exchange, lighting,),
	communication systems]
	- Specific Pants (systems of emergency management, detection, contrast and alarm)
ance	Conservation work Participation of adaptation to the norms
	- Machine [tool, operator, auxiliary (eg.
	pollutant collection systems, cooling, heating,)]
	- Work Equipment [instrumentation,
	equipment, localized systems of transport energy (eg. power cables,)]
	- Machinery and transport equipment
	 Devices (command and control, signaling, security)
	- Works provisional (eg. scaffolding,)
	- Suitability to he development of specific operations in the context
of use	- Installation - How to use
	- Maintenance status
	- Audit ; - Supervision;
	 Procedures for workers;
	 Procedures for machine operators; Procedures for personnel systems;
	- Procedures for supervisors;
	 Procedures for special operations personnel;
	- Information, formation and Training
	- Test
ons	Test Verification functionality before to use Types of maintenance applied
ons	Test Verification functionality before to use Types of maintenance applied Revision
ons	Test Verification functionality before to use Types of maintenance applied
	Test Verification functionality before to use Types of maintenance applied Revision Updating systems Raw materials and process products Products resulting from process deviations
ons	 Test Verification functionality before to use Types of maintenance applied Revision Updating systems Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration,
ological	 Test Verification functionality before to use Types of maintenance applied Revision Updating systems Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,)
ological	Test Verification functionality before to use Types of maintenance applied Revision Updating systems Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,) Environmental treatment (eg, thermal
ological	Test Verification functionality before to use Types of maintenance applied Revision Updating systems Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,)
ological onment	Test Verification functionality before to use Types of maintenance applied Revision Updating systems Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,) Environmental treatment (eg, thermal insulation, acoustic,) Lighting Massing available
ological onment	 Test Verification functionality before to use Types of maintenance applied Revision Updating systems Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,) Environmental treatment (eg. thermal insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment,
ological onment r the mental	 Test Verification functionality before to use Types of maintenance applied Revision Updating systems Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,) Environmental treatment (eg. thermal insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and
ological onment r the mental	 Test Verification functionality before to use Types of maintenance applied Revision Updating systems Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,) Environmental treatment (eg. thermal insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the
ological onment	 Test Verification functionality before to use Types of maintenance applied Revision Updating systems Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,) Environmental treatment (eg. thermal insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects)
ological onment r the mental	 Test Verification functionality before to use Types of maintenance applied Revision Updating systems Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,) Environmental treatment (eg. thermal insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates
ological onment r the mental	 Test Verification functionality before to use Types of maintenance applied Revision Updating systems Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,) Environmental treatment (eg. thermal insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and
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ological onment r the mental	 Test Verification functionality before to use Types of maintenance applied Revision Updating systems Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,) Environmental treatment (eg. thermal insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity) Vehicles / machinery / plant / equipment in motion, controlled by operator Vehicles / machinery / plant / equipment, automated motion (controlled by PLC)
ological onment r the mental Dject	 Test Verification functionality before to use Types of maintenance applied Revision Updating systems Raw materials and process products Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous) Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,) Environmental treatment (eg. thermal insulation, acoustic,) Lighting Massing available Behaviour (available to any person to produce answers, determined from the environment, family regarding social situations, groups, and objects) Position in relation to the duty cycle and the number of shifts Relationships with supervisors and subordinates Contract / employment Age Work Experience Conditions of health Psycho-physical state (eg, depressed, sleepy, drunk, drugged,) Attitude (predisposition for a particular mental or physical activity) Vehicles / machinery / plant / equipment in motion, controlled by operator Vehicles / machinery / plant / equipment,

OR

IN	DIRECT CAUSES OF FIRST LEVEL Electrical problem caused by a plant failure
	 Electrical problem caused by a plant failure Electrical problem caused by static electricity
Deviation due to electrical	 Electrical problem caused by missing insulation
problems, explosion, fire	- Electrical problem caused by external radiation / lightning
	- Explosion
	 Fire Another case relating to electrical problems, explosion, fire
	 Solid state - overflowing, overturning
	- Liquid state - leaking, oozing, flowing, splashing, spraying
overflow, overturn, leak, flow,	- Gaseous state - vaporisation, aerosol formation, gas formation
vaporisation, emission	- Pulverulent material - smoke generation, dust/particles in
	suspension/emission of - Another case relating to overflow, overturn, leak, flow,
	vaporisation, emission
	- Break of material, at junctions, connections, material agent
Breakage, bursting, splitting,	- Break / release of personal protective equipment
slipping, fall, collapse of Material	 Break with explosion of splinters (wood, glass, metal, stone, plastic, etc.) agent material
Agent	- Another case involving rupture, fracture, rupture violent.
	sudden and loud agent material
	- Slip, fall, loss of stability, collapse of Material Agent placed
	above (which falls on the victim)
Slipping, falling, loss of stability,	 Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim)
collapse agent material	- Slip, fall, loss of stability, the collapse of a material agent - at
	the same level
	- Another case relating to slipping, falling, loss of stability
	 collapse agent material Problems of total or partial control of the machine (including
	- Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material
	 Problems of total or partial control of the means of transport
	equipment material handling and / or substance (motorized or
	not)
Loss of control (total or partial) of	 Problems of total or partial control of a means of transport / handling of people and / or animals
machine, means of transport or handling equipment, hand-held	 Problems of total or partial control of hand tool (motorized or
tool, object, animal	not) as well as the material machined by
	- Problems of total or partial control of object (led, moved,
	moved, etc.).
	 Problems of total or partial control of animal Another cause of problems related to total or partial control of
	machinery, transportation / handling equipment, hand tools of
	objects, animals
	- Fall of person from the top through the opening
	 Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level
Slipping - Stumbling and falling -	 Suppling of tripping - with the fail of person - at the same level Loss of balance - with the fall of man - from
Fall of persons	- Loss of balance - with the fall of person - at the same level
	- Slipping or tripping on machinery
	- Another case involving slipping or tripping, loss of balance -
	 with the fall of person Walking on a sharp object
	 Walking on a snarp object Kneel, sit, lean against
	- Being grabbed, dragged, or moved by something from their
Body movement without any physical stress	momentum
	- Uncoordinated movements, gestures, inopportune,
	- Another cause relative movement of the body without physical
	exertion (which usually leads to an external injury)
	- Lifting, carrying or standing
	- Pushing, pulling, pulling
Body movement under or with	- Depositing, dropping
physical stress	 Twisting, turning Step false twisting of the leg or ankle, slipping without falling
	 Step raise twisting of the leg of ankle, suppling without raining Another cause relative movement of the body during physical
	exertion (which usually leads to an internal injury)
	- Surprise, fear
	- Violence, aggression, threat - including employees of the
	- Violence, aggression, threat-from people external to the
Shock, fright, violence, aggression,	company to the victims in the context of their function (bank robbery, assaulting bus drivers, etc.).
threat, presence	 Aggression, mobs, violence by animals
	- Presence of the victim or a third party that creates in itself a
	danger to the victim / for himself and if any other
	- Another case involving surprise, fright, violence, aggression,
	threat, presence

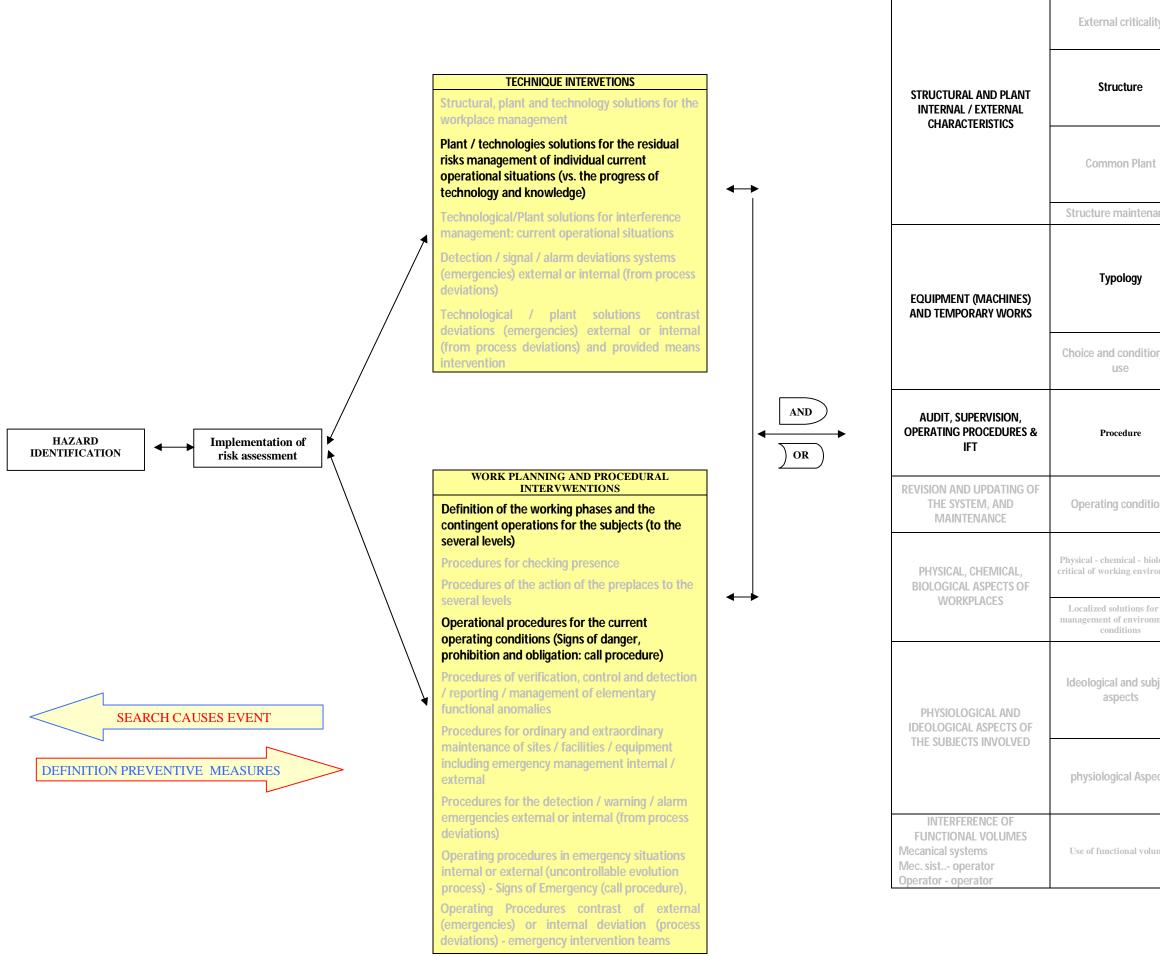
]	DIRECT CAUSE
	Contact with electric current, temperature	 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot Contact with object or cold or frozen Another case involving contact with electric current, temperature
	Contact with other material or substance	 Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with material or substance
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (the result of a fall) Horizontal motion, crash on / against Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion)
AND	Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
	contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
	Nesting, trapping, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping, crushing, crushing, pinching, etc
	Physical or mental effort	 Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
	Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans

4

Contusion on right wrist

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 15 Id</i> Part of body injured: right eye Type of injury: Burn	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would solve the problem	
1	CONTACT WITH OTHER MATERIAL OR SUBSTANCE - Contact with hazardous substances through the skin or eyes – <i>linked to the contact between the iron</i> <i>sketch to the worker</i>	It is necessary a suitable PPE or a protection system for the capture of the sketches	7
2	OVERFLOW, OVERTURN, LEAK, FLOW, VAPORISATION, EMISSION - Liquid state - leaking, oozing, flowing, splashing, spraying- related to the overflow of the iron by the ladle BODY MOVEMENT WITHOUTH ANY PHYSICAL STRESS - Uncoordinated movements, gestures, inopportune, inappropriate - related to the movements of the workers	It must need a suitable system for the capture of the iron sketches	6
3	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – Structure - Specific structural Aspects [eg. Structural safety equipment, escape routes (eg fire escape) and safe places] - linked to the absence of a protection system for the capture of iron sketches EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Typology - Machine [tool, operator, auxiliary (eg. pollutant collection systems, cooling, heating,)] – related to the type of ladle used AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – Procedure – Procedure for workers – related to the absence of procedure and related IFT	Evaluation of the choice of the solutions adopted	5

4	STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS - related to the protection system in the area of the ladles EQUIPMENT (MACHINES) AND TEMPORARY WORKS - related to the ladle and equipment used AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – related to the absence of procedure	 STRUCTURAL AND PLANT INTERNAL / EXTERNAL CHARACTERISTICS – creation of a suitable and safety work area EQUIPMENT (MACHINES) AND TEMPORARY WORKS – suitable equipment (ladle) AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – creation of procedure and formation, training of the worker 	4
5.1	Absence of a protection system	A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - choice of a suitable protection systemt	3
5.2	information, education and training Procedure of the worker	A. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - related the definition of procedure and IFT	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Choice of a protection system and related procedure with IFT	1



	INDIRECT CAUSES OF SECOND LEVEL
	- General criticality [boundary conditions (eg.
ty	topography, climate, availability of services, sociological context)]
5	- Specific criticality (seismicity, area exposed to floods, avalanches,)
	- General structural aspects (eg. general and
	local stability, allowable loads, materials, quality, efficiency,)
	- Specific structural Aspects [eg. Structural
	safety equipment, escape routes (eg fire escape)
	and safe places] - Consistency with the uses
	- General Plants [eg. distribution systems
	(production) of energy, management systems of the general environmental conditions (eg,
	heating, cooling, air exchange, lighting,),
	communication systems] - Specific Pants (systems of emergency
	management, detection, contrast and alarm)
nce	 Conservation work Participation of adaptation to the norms
	- Machine [tool, operator, auxiliary (eg.
	pollutant collection systems, cooling, heating,)]
	- Work Equipment [instrumentation,
	equipment, localized systems of transport energy (eg. power cables,)]
	 Machinery and transport equipment
	- Devices (command and control, signaling, security)
	- Works provisional (eg. scaffolding,)
no of	 Suitability to he development of specific operations in the context
ns of	- Installation
	- How to use - Maintenance status
	- Audit ;
	 Supervision; Procedures for workers;
	- Procedures for machine operators;
	 Procedures for personnel systems; Procedures for supervisors;
	 Procedures for special operations personnel;
	Information, formation and Training Test
	- Verification functionality before to use
ons	 Types of maintenance applied Revision
	- Updating systems
	 Raw materials and process products Products resulting from process deviations
logical	- Chemical pollutants (solid, liquid, gaseous)
onment	- Physical pollutants (eg noise, vibration, electromagnetic fields and radiation,)
	- Biological agents (eg, viruses, bacteria,)
r the	- Environmental treatment (eg. thermal insulation, acoustic,)
nental	- Lighting
	 Massing available Behaviour (available to any person to produce
	answers, determined from the environment,
ject	family regarding social situations, groups, and objects)
jeer	- Position in relation to the duty cycle and the
	number of shifts - Relationships with supervisors and
	subordinates - Contract / employment
	- Age
	 Work Experience Conditions of health
cts	- Psycho-physical state (eg, depressed, sleepy,
	drunk, drugged,) - Attitude (predisposition for a particular
	mental or physical activity)
	Vehicles / machinery / plant / equipment in
	motion, controlled by operator
mes	Vehicles / machinery / plant / equipment, automated motion (controlled by PLC)
	Workers on the move

OR

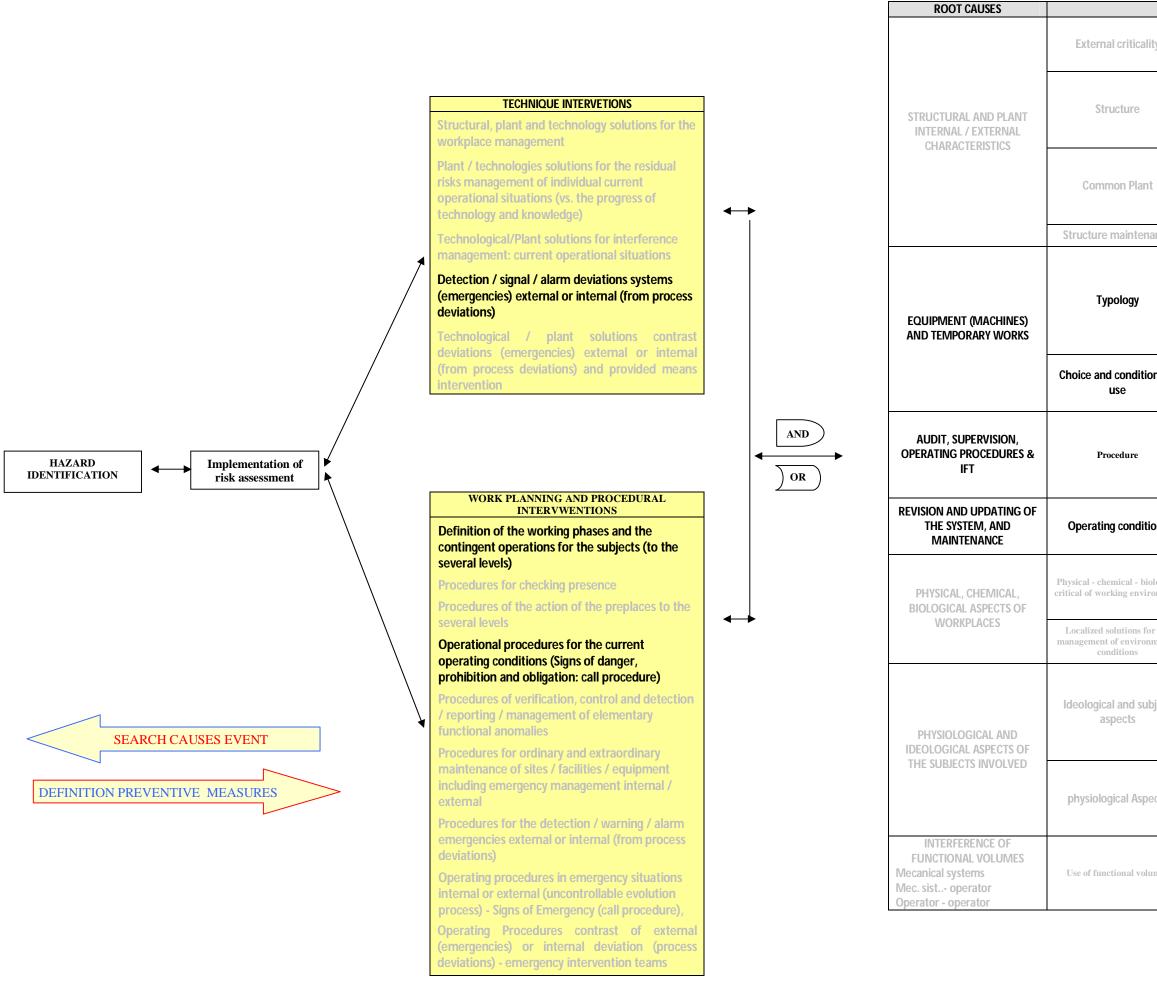
INDIRECT CAUSES OF FIRST LEVEL		
Deviation due to electrical problems, explosion, fire	 Electrical problem caused by a plant failure Electrical problem caused by static electricity Electrical problem caused by missing insulation Electrical problem caused by external radiation / lightning Explosion Fire Another case relating to electrical problems, explosion, fire 	
overflow, overturn, leak, flow, vaporisation, emission	 Solid state - overflowing, overturning Liquid state - leaking, oozing, flowing, splashing, spraying Gaseous state - vaporisation, aerosol formation, gas formation Pulverulent material - smoke generation, dust/particles in suspension/emission of Another case relating to overflow, overturn, leak, flow, vaporisation, emission 	
Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	 Break of material, at junctions, connections, material agent Break / release of personal protective equipment Break with explosion of splinters (wood, glass, metal, stone, plastic, etc.) agent material Another case involving rupture, fracture, rupture violent, sudden and loud agent material 	
Slipping, falling, loss of stability, collapse agent material	 Slip, fall, loss of stability, collapse of Material Agent placed above (which falls on the victim) Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim) Slip, fall, loss of stability, the collapse of a material agent - at the same level Another case relating to slipping, falling, loss of stability, collapse agent material Problems of total or partial control of the machine (including 	
Loss of control (total or partial) of machine, means of transport or handling equipment, hand-held tool, object, animal	 Problems of total or partial control of the means of transport / equipment material handling and / or substance (motorized or not) Problems of total or partial control of a means of transport / handling of people and / or animals Problems of total or partial control of hand tool (motorized or not) as well as the material machined by Problems of total or partial control of object (led, moved, moved, etc.). Problems of total or partial control of animal Another cause of problems related to total or partial control of machinery, transportation / handling equipment, hand tools or objects, animals 	
Slipping - Stumbling and falling - Fall of persons	 Fall of person from the top through the opening Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level Loss of balance - with the fall of man - from Loss of balance - with the fall of person - at the same level Slipping or tripping on machinery Another case involving slipping or tripping, loss of balance - with the fall of person 	
Body movement without any physical stress	 Walking on a sharp object Kneel, sit, lean against Being grabbed, dragged, or moved by something from their momentum Uncoordinated movements, gestures, inopportune, inappropriate Another cause relative movement of the body without physical exertion (which usually leads to an external injury) 	
Body movement under or with physical stress	 Lifting, carrying or standing Pushing, pulling, pulling Depositing, dropping Twisting, turning, turning Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physical exertion (which usually leads to an internal injury) 	
Shock, fright, violence, aggression, threat, presence	 Surprise, fear Violence, aggression, threat - including employees of the Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals Presence of the victim or a third party that creates in itself a danger to the victim / for himself and if any other Another case involving surprise, fright, violence, aggression, threat, presence 	

]	DIRECT CAUSE
	Contact with electric current, temperature	 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot Contact with object or cold or frozen
	Contact with other material or substance	 Another case involving contact with electric current, temperature Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with material or substance Vertical motion, crash on / against (the
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 vertical inversion, erash on / against (the result of a fall) Horizontal motion, crash on / against Another case involving crushing vertical and / or horizontal moving, fall on / against an immovable object / ground (victim in motion)
AND	Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
	contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
	Nesting, trapping, crushing, crushing, crushing, pinching, etc	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping, crushing, crushing, etc
	Physical or mental effort	 Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
	Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans

Burn on the eye

	RESEARCH CAUSES	ADOPTION PREVENTIVE MEASURES	
	<i>ED: 30 Id</i> Part of body injured: Face Type of injury: Burn	ev. sist. protective passive / active (in the case given the severity of the accident) PPE protection would solve in part the problem	
1	CONTACT WITH OTHER MATERIAL OR SUBSTANCE - Contact with hazardous substances through the skin or eyes – <i>linked to the contact between the fire</i> <i>to the worker's face</i>	It is necessary a suitable device for the equipment	7
2	DEVIATION DUE TO ELECTRICAL PROBLEMS, EXPLOSION, FIRE – Fire – related to the fire born by the power of the gas methane BREAKAGE, BURSTING, SPLITTING, SLIPPING, FALL, COLLAPSE OF MATERIAL AGENT - Break / release of personal protective equipment – related to the breaks of the safety device of the equipment	It must need a detection system of methane	6
3	EQUIPMENT (MACHINES) AND TEMPORARY WORKS – Typology - Devices (command and control, signaling, security) - related to the safety device of the equipment EQUIPMENT (MACHINES) AND TEMPORARY WORKS - Choice and conditions of use – Maintence status - related to the status of maintenance of the detection device AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – Procedure – Procedure for workers – related to the absence of procedure and related IFT REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – Operating condition - Verification functionality before to use linked to the control to do before the use of the equipment	Evaluation of the choice of the solutions adopted	5

4	EQUIPMENT (MACHINES) AND TEMPORARY WORKS - related to the equipment used AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – related to the absence of procedure REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE- related to the detection system of the equipment	 EQUIPMENT (MACHINES) AND TEMPORARY WORKS – suitable equipment (ladle) AUDIT, SUPERVISION, OPERATING PROCEDURES & IFT – creation of procedure and formation, training of the worker REVISION AND UPDATING OF THE SYSTEM, AND MAINTENANCE – suitable detection device for methane 	4
5.1	Absence of a detection system on the equipment	A. Detection / signal / alarm deviations systems (emergencies) external or internal (from process deviations) - choice of a suitable detection device	3
5.2	information, education and training Procedure of the worker	 A. Definition of the working phases and the contingent operations for the subjects (to the several levels) - related the definition of procedure and IFT B. Plant / technologies solutions for the residual risks management of individual current operational situations (vs. the progress of technology and knowledge) - related the definition of procedure and IFT 	2
6	<i>Hazard factor not identified</i> (choice of H.I. technique not appropriate for the context)	Setting of a detection device of methane on the equipment	1



	INDIRECT CAUSES OF SECOND LEVEL
	- General criticality [boundary conditions (eg.
ty	topography, climate, availability of services, sociological context)]
- 5	 Specific criticality (seismicity, area exposed to floods, avalanches,)
	- General structural aspects (eg. general and
	local stability, allowable loads, materials, quality, efficiency,)
	 Specific structural Aspects [eg. Structural safety equipment, escape routes (eg fire escape)
	and safe places]
	 Consistency with the uses General Plants [eg. distribution systems
	(production) of energy, management systems
t	of the general environmental conditions (eg, heating, cooling, air exchange, lighting,), communication systems]
	- Specific Pants (systems of emergency management, detection, contrast and alarm)
ance	 Conservation work Participation of adaptation to the norms
	- Machine [tool, operator, auxiliary (eg.
	pollutant collection systems, cooling, heating,)]
	- Work Equipment [instrumentation,
	equipment, localized systems of transport energy (eg. power cables,)]
	- Machinery and transport equipment
	 Devices (command and control, signaling, security)
	 Works provisional (eg. scaffolding,) Suitability to he development of specific
ons of	operations in the context
	- Installation - How to use
	- Maintenance status
	- Audit ; - Supervision;
	 Procedures for workers;
	 Procedures for machine operators; Procedures for personnel systems;
	- Procedures for supervisors;
	 Procedures for special operations personnel; Information, formation and Training
	Test Verification functionality before to use
ons	- Types of maintenance applied
	- Revision - Updating systems
	- Raw materials and process products
ological	 Products resulting from process deviations Chemical pollutants (solid, liquid, gaseous)
onment	- Physical pollutants (eg noise, vibration,
	 electromagnetic fields and radiation,) Biological agents (eg, viruses, bacteria,)
r the	- Environmental treatment (eg. thermal
mental	insulation, acoustic,) - Lighting
	 Massing available Behaviour (available to any person to produce
	answers, determined from the environment,
oject	family regarding social situations, groups, and objects)
Jeer	 Position in relation to the duty cycle and the number of shifts
	- Relationships with supervisors and
	subordinates - Contract / employment
ects	- Age
	- Work Experience - Conditions of health
	- Psycho-physical state (eg, depressed, sleepy,
	drunk, drugged,) - Attitude (predisposition for a particular
	mental or physical activity)
Imes	Vehicles / machinery / plant / equipment in
	motion, controlled by operator Vehicles / machinery / plant / equipment,
	automated motion (controlled by PLC)
	Workers on the move

OR

IN	DIRECT CAUSES OF FIRST LEVEL
Deviation due to electrical problems, explosion, fire	 Electrical problem caused by a plant failure Electrical problem caused by static electricity Electrical problem caused by missing insulation Electrical problem caused by external radiation / lightning Explosion Fire Another case relating to electrical problems, explosion, fire
overflow, overturn, leak, flow, vaporisation, emission	 Solid state - overflowing, overturning Liquid state - leaking, oozing, flowing, splashing, spraying Gaseous state - vaporisation, aerosol formation, gas formation Pulverulent material - smoke generation, dust/particles in suspension/emission of Another case relating to overflow, overturn, leak, flow, vaporisation, emission
Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	 Break of material, at junctions, connections, material agent Break / release of personal protective equipment Break with explosion of splinters (wood, glass, metal, stone, plastic, etc.) agent material Another case involving rupture, fracture, rupture violent, sudden and loud agent material
Slipping, falling, loss of stability, collapse agent material	 Slip, fall, loss of stability, collapse of Material Agent placed above (which falls on the victim) Sliding, fall, loss of stability, collapse of agent material placed below (which drags the victim) Slip, fall, loss of stability, the collapse of a material agent - at the same level Another case relating to slipping, falling, loss of stability, collapse agent material
Loss of control (total or partial) of machine, means of transport or handling equipment, hand-held tool, object, animal	 Problems of total or partial control of the machine (including the unintended equipment) as well as the processed material Problems of total or partial control of the means of transport / equipment material handling and / or substance (motorized or not) Problems of total or partial control of a means of transport / handling of people and / or animals Problems of total or partial control of hand tool (motorized or not) as well as the material machined by Problems of total or partial control of object (led, moved, moved, etc.). Problems of total or partial control of animal Another cause of problems related to total or partial control of machinery, transportation / handling equipment, hand tools or objects, animals
Slipping - Stumbling and falling - Fall of persons	 Fall of person from the top through the opening Slipping or tripping - with the fall of man - from Slipping or tripping - with the fall of person - at the same level Loss of balance - with the fall of man - from Loss of balance - with the fall of person - at the same level Slipping or tripping on machinery Another case involving slipping or tripping, loss of balance -
Body movement without any physical stress	with the fall of person - Walking on a sharp object - Kneel, sit, lean against - Being grabbed, dragged, or moved by something from their momentum - Uncoordinated movements, gestures, inopportune, inappropriate - Another cause relative movement of the body without physical exertion (which usually leads to an external injury)
Body movement under or with physical stress	 Lifting, carrying or standing Pushing, pulling, pulling Depositing, dropping Twisting, turning, turning Step false twisting of the leg or ankle, slipping without falling Another cause relative movement of the body during physical exertion (which usually leads to an internal injury)
Shock, fright, violence, aggression, threat, presence	 Surprise, fear Violence, aggression, threat - including employees of the Violence, aggression, threat-from people external to the company to the victims in the context of their function (bank robbery, assaulting bus drivers, etc.). Aggression, mobs, violence by animals Presence of the victim or a third party that creates in itself a danger to the victim / for himself and if any other Another case involving surprise, fright, violence, aggression, threat, presence

		DIRECT CAUSE
	Contact with electric current, temperature	 Indirect contact with the electrical circuit, lightning (passive) Direct contact with electricity, suffer an electric discharge in the body Contact with flame or object / warm or red- hot Contact with object or cold or frozen Another case involving contact with electric current, temperature
	Contact with other material or substance	 Contact with hazardous substances for nasal, oral, inhalation Contact with hazardous substances through the skin or eyes Contact with hazardous substances through the digestive system, swallowing or eating Drowning in a liquid Burial under a solid Immersion in a gas, in a suspension of particles Another case involving contact with material or substance
	Crushing vertically and / or horizontally moving, fall on / against an immovable object / ground (victim in motion)	 Vertical motion, crash on / against (the result of a fall) Horizontal motion, crash on / against
AND	Struck by moving object, collisions with	 Struck by object projected Struck by falling object Struck by object that oscillates Struck by object in rotation, motion, displacement, including vehicles Collision with a moving object, including vehicles - a collision with a person (the victim is moving) Another case involving a collision by moving object, collision with
	contact with sharp material agent, pointed, hard, abrasive	 Contact with a sharp Material Agent (knife / blade) Contact with a sharp Material Agent (nail / sharp tool) Contact agent with hard or abrasive material Another case concerning materials in contact with agent edgy, sharp, hard, abrasive
	Nesting, trapping, crushing, crushing, pinching, etc.,	 Nesting, trapping, crushing in / inside Nesting, trapping, crushing under Nesting, trapping, crushing between Tearing, cutting of a member, a hand, a finger or more parts of the body Constrict of whole body or of one or more parts of it By pinching Another case involving nesting, trapping, crushing, crushing, pinching, etc
	Physical or mental effort	 Physical effort at the expense of the musculoskeletal system Physical exertion caused by radiation, noise, light, pressure Effort psychic, mental shock Another case involving mental or physical effort
	Bite, calcium, etc., by animals or humans	 Bite Puncture by insects or fish Shot, football, head, strangulation Another case relating to bite, kick, etc., by animals or humans

SEVERITY and TYPE OF INJURY (medical report data)

Burn on the face

Appraisals and Consulting of C.T. P.M.