

Dinko Jurjević



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# SAFETY AT WORK FOR CATERING EMPLOYEES

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## INTRODUCTION

The primary purpose of this handbook is to provide essential informations about safety to employees who work in catering industry, whether permanently or temporary. They can also find it useful for passing exams in Safety, Fire Safety and First Aid. In the following text by employees are ment all the persons meeting the risks of injury in their working routine, including students, students on professional training or on professional practice.

## MACHINES IN CATERING INDUSTRY



Toaster



Potato peeling machine



Meat milling machine



Bone cutting machine



Vegetable cutting machine



Slicer

## SAFETY AT WORK SYSTEM

### SAFETY AT WORK

The Safety Rules improve the employees' safety and protection of health. The principles of Safety at Work are risk prevention, employees training, informing and consulting employees and their representatives with employers and their authorities, as well as care of particularly sensitive group of employees.

The Safety Rules are applied in all activities having employees working for employers, excluding working for army, police, fire department and similar, as well as housekeeping works.

#### TERMS OF SAFETY AT WORK:

- **Biological noxiousness** are biological agents, microorganisms, including those genetically modified, cell cultures and endoparasites of human and animal origin, which can cause infection, allergies or poisoning, and which are used in work process or are present in work environment.
- **Other person** is a person who happens to be at workplace on any job basis (business associate, provider and similar).
- **Explosive atmosphere** is a mixture of air and flammable gas or steam or nebulae or dust at atmospheric conditions, where after the initial ignition the burning process is transmitted to the whole mixture, and therefore represents a possible source of explosion or fire on workplace which can hurt employees and other persons.
- **Dislocated workplace** is workplace where the employee performs the work - at home or in some other location other than the employer's workplace.
- **Workplace** is any place where the employees and workers need to be or have to go to or have an access due to their work, as well as any place or room chosen by the employer as work area and which is under his direct or indirect supervision.
- **Efforts** are statodynamic, psychophysical efforts, efforts of eyesight and efforts of speaking, possible cause of health damage for the employees.
- **Accident** is an unexpected and unwanted event at work or related to work which did not cause any hurting of the employees, but which by minimal modification of subjective or objective circumstances could easily cause hurting if it were repeated.
- **Dangerous chemicals** are substances, mixtures and preparations in accordance with special regulation.
- **Dangers** are all working conditions and conditions related to work which can endanger the employees' safety and health.
- **Person at work** is a physical subject performing some activities or works for the employer while not being actually employed by him (person on professional training; person on seasonal temporary and periodic work; person who performs some jobs in accordance with special regulations; person who works as a volunteer, apprentice, student, high-school student on professional practice; person who works during the execution of a prison sentence or as an educational measure etc.)
- **Authority** is the worker who has been given the authorization by the employer to perform safety at work, regardless the other assignments he is given.
- **Authorized person** is the legal entity or physical person who has been given the authorization by the ministry to perform safety at work.
- **Injury at work** is employee's injury that happened in his workplace, work or access area defined by the employer, as well as any other place not in actual possess of the employer but also defined as work area.
- **Employer** is a physical person or legal entity having employees or persons at work performing tasks for him.
- **Particular work conditions jobs** are those jobs that beside general employment conditions also require some particular

conditions regarding age, professional qualification, health condition and psychic stability.

- **Safety at work commissioner** is the worker who has been elected to represent the employees' interests in the field of Safety at Work.
- **Prevention** is planned or undertaken measure in every working process having as goal the prevention or reduction of risk at work.
- **Worksite** is temporary or mobile place of work, like construction site, forest site, ship construction site or place where are being performed works of maintenance, demolition and repairs, agricultural works and works on research and exploitation of mineral raw material.
- **Work equipment** are machines and devices, facilities, means of transport and load transport, tools, ferries and other means for periodical work at height.
- **Work environment** is defined by physical, chemical and biological factors of the workplace and in surroundings.
- **Workwoman who breastfeeds a baby** is the workwoman mother of a child up to 1-year age who breastfeeds, who has informed the employer about it in writing within 30 days at the latest before returning to work.
- **Workwoman who has recently given birth** is the workwoman who has given birth not more than six months ago, who has informed the employer about it in writing.
- **Worker** is a physical person who as employee performs tasks for the employer.
- **Risk** is the product of probability of dangerous or harmful occurrence and the damage itself and its consequences.
- **Occupational medicine specialist** is the specialist chosen by the employer according to the specific Health Care and Medical Insurance Regulations.
- **Means of work** are structures intended for work including the installations, devices and equipment, means of transport and work equipment.
- **Work stress** are health and physical changes resulting from the accumulating stressor impact at work for a long time, that are manifested as physiological, emotional and cognitive reactions and behavior changes of the worker.
- **Safety at work specialist** is the worker who has been elected by the employer to perform safety at work and who meets the conditions provided for their performing.
- **Noxiousness** are chemical, biological and physical noxiousness capable of damaging the health of workers and other exposed persons.
- **Pregnant workwoman** is the workwoman who has informed the employer about her pregnancy in writing.

**Basic rules of Safety at Work** implicate some requirements for the means of work in use, and in particular:

- 1) mechanical hazards protection
- 2) electric shock protection
- 3) fire and explosion prevention
- 4) mechanical resistance and structure stability ensuring
- 5) work surfaces and work space ensuring
- 6) ensuring the passage, transport and evacuation routes of some workers and other persons
- 7) cleanliness ensuring
- 8) ensuring the prescribed temperature, air humidity and airflow rate limits
- 9) proper lighting ensuring
- 10) noise and vibration protection
- 11) protection against harmful atmospheric and climatic influences
- 12) protection from physical, chemical and biological harmful effects
- 13) excessive efforts protection
- 14) protection against electromagnetic and other radiation
- 15) ensuring the rooms and devices for personal hygiene.

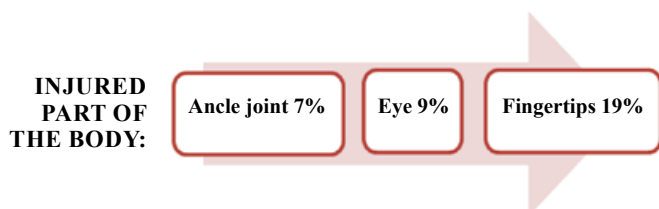
The basic rules of Safety at Work have an advantage over the Special Rules on Occupational Safety.

**Special rules on Occupational Safety** implicate both rights and obligations regarding:

- 1) Special rules on Occupational Safety implicate some requirements about age, gender, final vocational education as well as other forms of training, health condition, physical state, psychophysiological and psychic abilities that must be satisfied by workers when performing tasks with special working conditions
- 2) Organization of work time and daily rest
- 3) Way of using the appropriate personal protection equipment
- 4) Special procedures when using or being exposed to physical noxiousness, hazardous chemicals or biological noxiousness
- 5) Setting the informing or guiding security signs
- 6) Instructions about the working procedures and the specific way of having them done, in particular regarding the duration of work, performing a homogeneous work and work per effect in a defined time (taskwork) and the worker exposure to other efforts at work or related to work
- 7) Procedures with injured or sick worker till providing emergency medical assistance or admission to a health institution

## ACCIDENTS AT WORK

Accident at work is every unpredictable event that causes injury or material damage. Injury at work is an injury, health damage or death. Occupational diseases are diseases that occur as a result of work or occupational activity, and which are included in the list of occupational diseases. Work-related diseases are diseases that occur as a result of work or occupational activity, and which are not incorporated into the list of occupational diseases. In the Republic of Croatia about 50 workers annually perish, and about 1000 workers are being heavily injured. The largest number of accidents at work is related to forestry and civil engineering.



**Picture 1: Three most common categories of injuries at work in the Republic of Croatia**

## NON-SMOKER PROTECTION, PROHIBITION OF ALCOHOL AND OTHER ADDICTIVE SUBSTANCES ACCORDING TO REGULATIONS AND FACILITY TYPE

Addictive substances are substances that influence the physical and mental state of the worker, endangering his own security as well as security of all persons he is in contact with during work (drugs, medicaments and similar). The employer is obliged to remove temporarily from the workplace the worker who is under the influence of alcohol or other addictive substances, according to regulations.

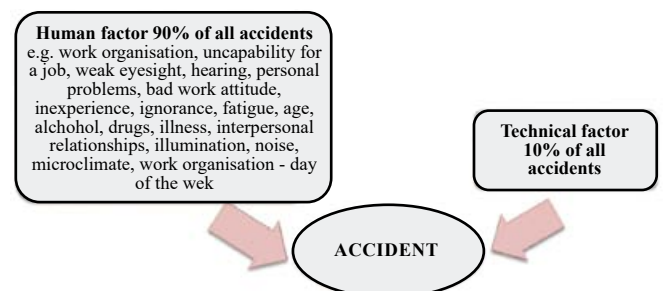
## WORKERS RIGHTS AND OBLIGATIONS

At demand of the employer, the worker is obliged to be trained for safe work. Before he gets deployed on particular work conditions jobs as well as during their performing, the worker is obliged to access the medical examination required by the employer. Also,

before he gets deployed on those jobs as well as during their performing, the worker is obliged to inform the doctor about illness or other circumstance that disenables or distracts him from the work obligations, or that endangers life or health of other workers. The worker must perform his assignments with due attention according to the Safety at Work regulations, according to the employer's or authority's instructions and according to the manufacturers' instructions for machines and devices, personal protective equipment and working materials. Likewise he is obliged to use the provided personal protective equipment.

It is considered that the worker performs his assignments with due attention when he follows this procedure: before starting he examines the workplace and informs the employer or authority about the eventual defects; he performs his job according to the profession rules, manufacturer's instructions for machines and devices, personal protective equipment and working materials as well as the employer's or authority's instructions; he wears or uses personal protective equipment during work; before leaving the workplace he ensures that the means of work do not endanger other workers or other means of work.

The worker is obliged to cooperate with the employer, authority or commissioner to solve all the safety at work issues. He is obliged to inform them about everything he considers immediate danger against safety and health, likewise about any defect in the safety at work system. The worker must be informed about all the changes in working process that influence his safety and health. In case he is immediately endangered against life and health for not being applied the prescribed safety rules, the worker has the right to refuse working, which he is obliged to notify to the employer, authority or his safety at work commissioner.



**Picture 2: The most prominent causes of accidents at work. According to the statistical data most accidents at work (90%) are caused by workers' mistake, while technical defects cause only about 10% of all accidents.**

## TYPICAL DANGERS FOR WORKERS IN CATERING INDUSTRY

The most common injuries in catering industry are generated by the following causes: incorrect electrical installation or devices; improper handling of machines or devices; machines without protective devices; unprotected openings on the floor; lack of fence on the staircase; sloppy, slippery or damaged floor; inadequate transport of goods, improper storage of goods, insufficiently illuminated spaces, improper handling of gas installations; improper handling of pressure vessels and similar.

The catering workers perform their job mostly standing 8 hours a day, which can cause widening the vein on their feet, spine damage, flat feet and similar. The kitchen staff is exposed to heat, grease, vapour, combustion gases and similar.

For each kind of job and each object it is necessary to make the Risk Assessment.

Exposure to dangers	Probability of injury		
	Small	Moderate	High
Mechanical hazards		x	
Falls and crashes			x
Electricity		x	
Chemical working materials	x		
Biological working materials		x	
Fire and explosions			x
Hot and cold materials			x
Noise	x		
Dust	x		
Radiation	x		
Cold, heat	x		
Bad illumination	x		
Microclimate		x	
Physical effort		x	
Unnatural position		x	
Psychological effort	x		

Picture 3: Example of risk assessment for a typical job in catering industry

## SAFETY AT WORK MEASURES

The primary Safety at Work measures regarding the most frequent sources of danger are briefly mentioned so they can be easily noticed and remembered. Only the most frequent measures are presented.

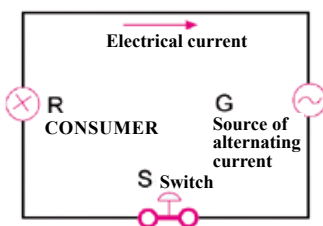
When starting working with new means the worker is obliged to study the instructions thoroughly, and the manager must inform him about the dangers and show him the proper way of use. The description requires some technical foreknowledge on high school level.

### ELECTRICITY

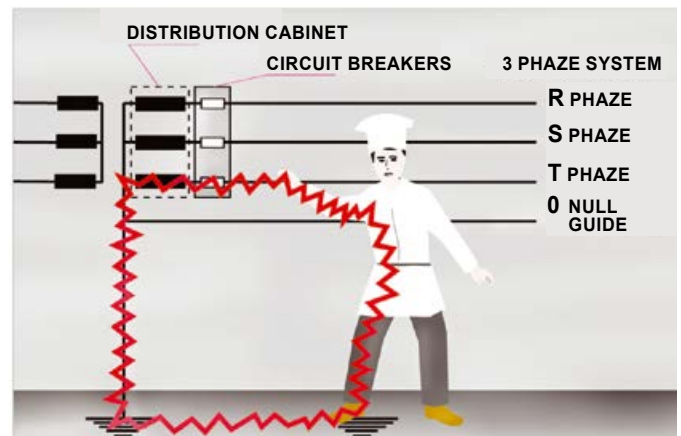
AC voltage above 50 V is dangerous.

It is not allowed to use electrical appliances and devices without studying first the instructions for use as well as the labels on the device itself. Before use, check if the electric consumer and the connection line are complete, undamaged and correct.

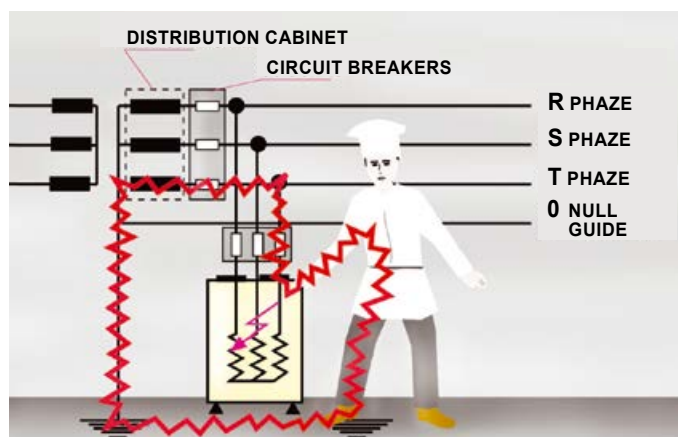
In case of interference or malfunction it is necessary to immediately turn off the voltage or to unplug the plug from the socket. It is not allowed to use damaged interrupters, plugs and connectors. Repair of electrical appliances can be performed only by professionalist.



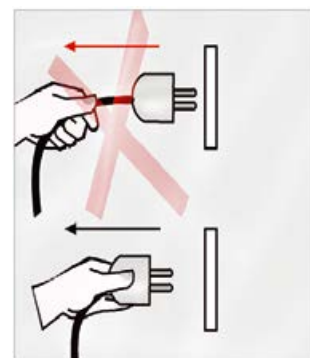
Picture 4: Example of a circuit. Electricity flows only when the circuit is closed. In a circuit there are a source of electricity, a switch, a consumer and conductors. The power of electrical current depends on the voltage and the resistance of the circuit.



Picture 5: Electric shock due to direct contact voltage - a person has touched the so-called phase system with ground voltage 220 V causing the closure of circuit through the body.



Picture 6: Indirect contact voltage occurs when a metal housing usually not under voltage - eg. boiler, electric stove, etc. comes under voltage (error voltage) due to isolation breakthrough and similar. The lower the resistance of electrical circuit flow through the human body and higher the voltage on the housing are, the stronger electricity flows through the human body according to the common expression  $I = U/R$ . ( $I$  - amplitude of current in amperes,  $U$  - voltage in volt,  $R$  - resistance in ohm). Also important is the duration of the electric shock. Death can occur at the voltage of alternating current above 50 V (in normal conditions), but also at lower voltage in extreme humidity and in contact with metal on larger body surface.



Picture 7: Pull the plug out of the socket catching the plug instead of the wire. Hands must be dry, plug and socket undamaged and clean. Greasy and dirty contacts can disable the contact with the protection conductor. The system having warm cables, plugs, sockets, circuit breakers and other needs to be shut down immediately.



Picture 8: Simultaneous contact of the body under voltage and eg. a metal waterpipe generates the risk of electric shock. When replacing the bulb or opening electrical devices, first thing to do is to switch off the voltage. Electric consumers and appliances must be regularly maintained, periodically reviewed and examined by a qualified person.

If somebody gets injured by electricity, and is still under circuit, he/she needs to be liberated immediately. The most secure way to release the afflicted person from the electrical circuit is to break the circuit by switching it off. Every person afflicted by electricity needs to be examined by a doctor.

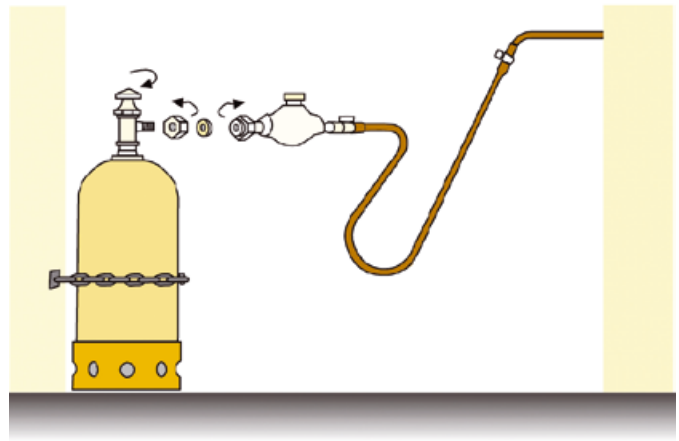
## GAS

Flammable gases are pressurized, liquid or pressurized gases with critical temperature lower than 323,15 K (50°C) or 323,15 K (50°C), the vapour pressure higher than 300 kPa (3 bar) and which may be ignited and/or explode. Flammable gases of common knowledge are natural gas, propane-butane gas and urban gas.

- **keeping flammable liquids/gases** is storage/disposal of flammable liquids/gases in buildings, building areas or outside of them in containers of total volume under 2.000 l of combustible liquids and respectively 20 l of flammable (easily flammable) liquids and under 30 kg of flammable gases
- **tanks** are stable, semi-stable or transportable closed containers placed on a particular base, containing flammable liquids or gases above 250 l for flammable liquids, and respectively above 50 kg for flammable gases
- **containers** are closed pots containing flammable liquids or gases up to 250 l of volume for flammable liquids, and respectively up to 50 kg for flammable gases, designed according to Croatian regulations and norms
- **bottles** are closed pots containing flammable liquids or gases up to 0,2 l of volume or equal (lacquers, alcohol, gas for lighters, sprays filled with butane or propane etc.)
- **gas installation** is the installation starting from the main shut-off closure at the end of gas connection, ie. from the gas tank do the flue gas discharge, consisting of gas pipeline with equipment, gas devices and consumers, appliances or air supply opening for combustion and flue gas outlet
- **danger zone** is the compromised space inside or outside the building, building areas or areas containing flammable liquids and/or gases, with presence or possible presence of flammable vapour/gas and air mixture that after ignition burns throughout the untreated mixture, defined and classified according to regulations and Croatian norms
- **reactive substances** are substances with possible spontaneous chemical reaction in contact with other substances causing destruction of other substances, temperature increase and similar
- **self-inflamatory substances** are substances with possible spontaneous ignition in contact with air or water and without any heat source (opened door, spark or high temperature)
- **operator of the distribution system** (hereinafter: operator) is a legal entity or physical person distributing gas directly to the final customer who is buying gas for his own consumption needs (hereinafter: customer), through gas pipeline or by tank delivery (eg. wagon tankers, tankcars and similar).

**In public or business buildings or building areas the customer is obliged to examine the gas tightness and condition of the gas installation at least once every 5 years or more often. Gas consumers need to be regularly examined once a year.**

Chimneys for gas consumers must be certificated and cleaned at least once a year.



**Picture 9: Bottled gas - Bottled propane-butane gas is used in need of flexible and easily transportable energy, with simple and easy distribution up to farthest places.**

## SAFETY MEASURES WHEN HANDLING BOTTLED GAS

- always keep the bottle uprightly and with the valve being closed
- the position of the bottle needs to be equal or higher than the surrounding area, do not use nor storage bottled gas in rooms lower than surrounding area (cellars, staircases)
- do not expose the bottle to the sources of heat or temperature higher than 40°C (sun, fire and similar)
- the bottle storage place needs to be regularly ventilated
- on every replacement of a gas bottle do change the existing seal on the coupling nut, and examine the rubber tube
- after consumption of gas, make sure to close the valve on the bottle
- do not connect the bottle on the consumer without a pressure regulator
- examine the equipment regularly
- gas consumers must be repaired by Authorized Service Provider
- when replacing the gas bottle it is strictly forbidden to smoke or to access with open flame
- in case of bottle fall or valve damage for any other reason do carry the bottle outside and check the valve
- follow the manufacturer's instructions for gas consumers
- keep the gas bottle away from children's reach

### If you feel odor or uncontrolled leakage ("wheezing") of gas in the room:

- Close the valve on the gas bottle, open windows and doors, do not turn on possible sources of sparking (light, lighter, turn off the fuse, the fridge). Use soapsuds or a special spray for this purpose to check the leakage location.

### When uncontrolled ignition (flame) occurs on installation or consumer:

- Close the valve on the gas bottle, disconnect the bottle and carry it outside the room, turn off the fire with fire extinguisher. If the gas leaking is stopped (the valve on the bottle is closed), fire can be watered.

In case it is not possible to extinguish the fire, immediately notify the attendees and carry out the evacuation procedure. Call the Fire Department 112 or 193.

### When a fire occurs in adjacent areas:

- Carry outside both empty and full gas bottles in order to get them out of the reach of fire.

In contact with the body (hands, face...) gas can cause frostbites. The injured part of the body needs to be cooled by water immediately, seek medical attention if necessary.

## APPLIANCES AND DEVICES

Appliances and devices are equipped with protective implements in order to prevent as much as possible the injury at work. Protective implements should not be removed from the appliances. Every damage or deficiency on protective implements must be reported immediately to the manager, and the appliance must be turned off. Before the machine is put into operation it is necessary to make sure that the tools are firmly tightened. While the machine is in operation it is not permitted any adjusting, lubrication, cleaning or fixing. Prior to all that it is necessary to stop the drive motor, wait for all the machine parts to stop as well and to ensure the machine against accidental start. During work use personal protective equipment.

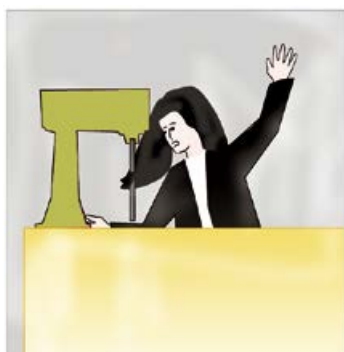
During the **saw blade** operation it is forbidden to touch the band with fingers. During the whole operation the protection device must be adjusted in order to leave accessible only the working segment of the band. The meat cutting saw band must be protected all over in order to prevent worker's injury in case of band rupture. The food should be suppressed to the knife by the suppressor, while hand suppressing should be avoided.

On the **bread slicing machine** the knife should be protected by an armor except for the segment where the bread cutting is performed. All dangerous parts: transposal area, knife, rotating segments and similar must be protected by a protective armor. Bread suppression is performed by a special device placed on the machine. Sliced bread extraction can be done only when the machine is stopped.

When working on **machines for washing and peeling potato or similar vegetables**, during the throwing-in potatoes process the machine must be stopped, and afterwards the opening should be covered and the machine put into operation. It is forbidden to



**Picture 10: Workers' access to the hazardous area must be prevented by protective devices. The entrance height "a" to the machine is intentionally designed in such a way that human hand cannot be pulled in. In case when the height "a" allows the entrance of the hand, then "b" must be that long to prevent the hand reaching the knife.**



**Picture 11: Do not tilt above the machine at work and do not touch it with the body. Flat axes, cardan joints and the like can catch hair and clothing. Incorrect clothing with no cuffs on the sleeves and legs, long hair, scarves, ties, jewelry etc. can get stuck on the moving part of the machine and cause an accident.**

remove the cover during operation, as well as put hands in the machine. Modern machines stop automatically when the cover is removed or the opening is blocked.

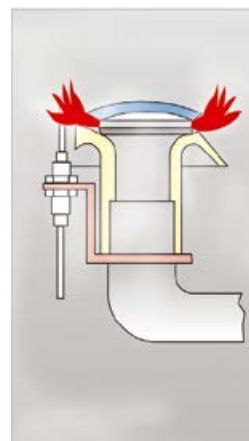
**Boilers for fast food preparation** are pots under pressure where food is prepared while having the metal lid hermetically sealed. Each boiler under pressure must have a safety valve which prevents the pressure increase above allowed, as well as a manometer to control the pressure in the boiler having a permissible pressure mark. The rubber seal of the boiler lid and the safety valve must be checked regularly. During cooking, it is forbidden to touch the safety valve. Before the boiler is opened, the steam should be released from the boiler to reduce the pressure, and only afterwards the boiler cover bolts should be lightly released.

The greatest danger to **gas cookers and gas boilers** is the explosion of the mixture of gas and air, as well as gas or carbon monoxide (CO) poisoning. Usually the explosion happens when unleaded or insufficiently burned gas comes out of the installation or appliance into closed rooms causing explosive atmosphere. In order to prevent uncontrolled gas discharge from gas installation, stove and similar, in the gas supply pipe should be installed a safety valve with a bimetallic fuse which automatically interrupts the gas supply as soon as the flame on any burner goes out. Gas ignition lighters should be activated before opening the gas.

Gas stoves and gas boilers must be distant from flammable materials for at least 60 cm. On a gas stove where the combustion gases can not be drained through special chimneys, proper suction hoods must be installed directly above the burner. The chimneys being connected to the gas boilers must have windscreens installed. The chimney should be checked by the Chimney Man at least twice a year. Examinations may only be performed by Authorized Installers. Gas poisoning usually occurs when unlit gas or combustion product enters the room through the perimeter of gas installation or smoke pipeline. The flame on the auxiliary burner should be about **35 mm** long. The auxiliary nozzle flame should not be too intense in order to prevent the bimetal spring heating up to the red embers, for spring can burn out very quickly. If amounts of gas larger than its nominal load flow through the gas boiler or if there is not enough fresh air in the room, due to reduced oxygen content an incomplete gas combustion, the production of carbon monoxide (CO) will occur.

**In order to avoid generation of toxic carbon monoxide gas (CO) it should be ensured that the room size corresponds to the capacity of all built-in gas consumers and that a sufficient amount of oxygen indispensable for normal gas combustion and room ventilation is provided. For higher consumers it is necessary to anticipate the ventilation hood.**

Gas devices such as boilers need to be examined once a year. The checkup is performed by an Authorized Gas Installer. Smoke pipes need to be examined at least twice a year.



**Picture 12: Blue flame without yellow peaks and without smoke is a sign of right gas and air ratio required for normal and complete gas combustion. The flame on the auxiliary burner must be about 35-40 mm long. Too small flame should be avoided for it could be extinguished by sudden air flow, overflowing of food or incorrect installation. The length of all the flames on the burners should be equal and their color should be light blue.**

## HAND TOOLS

Hand tools are knives, scissors, bone cutting machines and similar. Appropriate and correct tools should be used for every job without improvising, replacing, supplementing, etc. The tool should be used as it is produced and for the specific purpose it is intended.

When using **knives** the greatest danger is threatened by the slippage of fingers or palm on the knife blade. For this reason, a knife with a long handle should be used so that it can be held by fist safely and firmly during operation. The knife handle must have a dent for the fist (at least 15 mm deep) or a metal shield. Closing knives are not to be used. Knives should not be kept unprotected but rather put in special drawers or protective docks. When using a knife, the blade must never be facing the body, it should never cut towards the body, and the workers should have enough workspace.

## HANDCART

For a particular transport purpose always use only the intended type of trolley. The trolley is driven by pushing, not by pulling. Do not push it with your body but only with your hands and do not keep the trolley by side. When the work is done put the trolley away on its place and ensure it against accidental moving.



**Picture 13:** Trolley parts must be designed in such a way that neither the trolley nor the load can hurt the user. The trolley should be loaded uniformly in order to not disturb stability. When loading, push firmly the foot on the axle of the trolley to the ground to prevent it from moving. Check the trolley's permitted load carrying capacity.

## HAND LOAD TRANSPORT

Handling load is harmful to the spine, joints and muscles. Appropriate lifting technique should be applied to lift the load. Prior to lifting the load, it is necessary to evaluate its weight and the path to cross, as well as the way and the place of disposal. The worker should move in total 1000 kg of load at the most in two hours and on the same day he should not be burdened with additional work on transport.



**Picture 14:** Load should be lifted from the crouching position with space between knees. In this position the spine is significantly less stressed. If the load is too heavy for a single worker, he should seek help from someone.



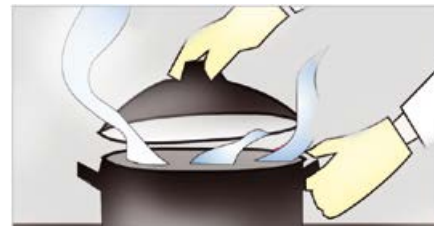
**Picture 15:** Sharp-edged loads that are raised from the floor must be shimmed for easier operation. The grip of the load must not be altered during the transfer. Prior to lifting the load it is necessary to evaluate its weight and the path to cross, as well as the way and the place of the disposal.

### Maximum permissible load for hand transport/kg

AGE	MEN	WOMEN
15 to 19	25 (35) for physical workers	13
19 to 45	25 (50)	15
above 45	25 (45)	13
expectant mothers	-	5

**Picture 16:** Maximum permissible load mass for hand transport

When transferring **hot pots or dishes with warm food or water**, use personal protective equipment. Do not raise alone too heavy objects.



**Picture 17:** When handling hot pots or dishes with warm food or water, make sure to use personal protective equipment.

Manual transport of load should be replaced by mechanical means whenever it is possible. Personal protective equipment, gloves, shoes, overall and apron should be used for manual transport. Shoes should have a steel cap if heavy loads that could fall on toes are being transported.

## SAFETY OF MOVEMENT

Access to the working rooms is allowed only to authorized persons. The rooms must be locked when no work is being performed inside. The workers should use entrances, exits and traffic routes defined for them. Dangerous spots must be marked. Without the manager's permission the workers are not allowed to move to other departments where they do not work.

**When moving and transporting hot pots or pots with hot water through areas where other personnel moves, it is necessary to make a warning and pay attention to the movement paths. The vessels should be transported by a trolley making sure that the wheels do not hit the holes on the floor grilles.**

Passes, steps, corridors, etc. must be well-lit during work. All openings and floor channels should be covered with appropriate lids that need to be in their own place when personnel is working. If the lids should be raised/opened, the openings must be enclosed with secure fences at least 1 m high. To ensure safe work and movement of personnel, a protective fence should be installed on all stairs. In warehouses the goods need to be put in the compartments, so that stored material cannot fall. Passes in the warehouses should be free and well-lit.



**Picture 18:** Fall into a floor opening while carrying a view-hiding load. All floor openings must be enclosed with fences and marked. Paths and passes, stairs and other movement areas need to be clean, without obstacles or bulges, and well-lit.



**Picture 19:** Stickers should be placed on the glass door in order to make it visible. The door must be opened outwards in the exit direction due to evacuation. It should not be locked.



**Picture 20:** Stepladders are correct only if whole, if the bars are built-in, legs secured to each other by a rope, chain and similar. All ladders must be manufactured according to the Safety at Work regulations, with standard and certificate mark. Only one person at a time should stand on a ladder. Hands need to be free. Tools should be carried in a waist bag. When climbing, bars should be held by hands. If there is no handrail (as on picture) the stepladder is supposed to have two stairs at most.



**Picture 21:** Floors should be always kept dry, clean and degreased. Footwear must be adequately designed with antifouling rubber insole. The room floors need to be flat, smooth but not slippery, wear-resistant and easy to clean. Dirt and water need to be removed from the floor as soon as possible.

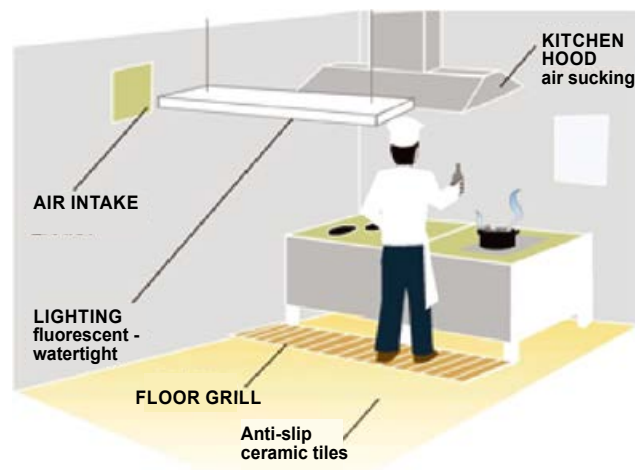
## WORKING ROOMS

The working rooms should be airy, wide enough with a window, natural or artificial ventilation, adequate lighting and heating. It is necessary to provide a free surface of at least 2 m<sup>2</sup> of floor and 10 m<sup>3</sup> of air space per person.

If it does not compromise the working process, the following microclimate conditions should be provided in the working rooms, according to the type of work:

- work without physical strain      20 – 24° C
- easy physical work                    18 – 20° C
- hard physical work                    12 – 18° C

When air conditioner is being used, the relative humidity recommended value ranges from 40 to 60 %. If it's used in warm period, the indoor and outdoor temperature should not differ more than 7° C. Airflow in working rooms depends on the type of work and the technological process, and should not exceed 0,5 m/s in cold period (outdoor temperature up to 10° C), 0,6 m/s in transitional period (outdoor temperature from 10 to 27° C) and 0,8 m/s in warm period (outdoor temperature above 27° C). When air conditioner is being used, the air velocity on the permanent working place should not exceed 0,2 m/s. Natural ventilation is only allowed in the working or auxiliary rooms with normal microclimatic working conditions where no condensation of water vapor is generated, as well as great heat, harmful vapors, gases, smoke, fog and dust. Other spaces need to be vented by forced ventilation.



**Picture 22:** Working room should be equipped with adequate lighting, heating and ventilation. It is necessary to ensure at least 10 m<sup>3</sup> of space per worker and at least 2 m<sup>2</sup> per person in the room. The kitchen ventilation should reach at least 20 air changes per hour.

## PERSONAL PROTECTIVE EQUIPMENT

In order to protect the organism and the parts of the body, the workers being exposed to certain types of danger and noxiousness are given at their disposal means for personal protection, or personal protective equipment if the effects of danger and noxiousness cannot be removed by other protection at work measure. The Workplace Hazard Assessment or the Work Safety Regulations define on which jobs, on which working places and which means or equipment should be used in a certain organisation.

Catering clothing is also defined by other regulations: they define the type of particular workwear and footwear that workers in direct contact with groceries should wear, whether in manufacture or in transport. Workwear and footwear for health protection in food and products manufacture and transport should not be used outside of the working area.

### Special workwear and footwear for workers in direct contact with groceries:

1. On food manufacturing - trousers or skirt, shirt or blouse/smock, cap or kerchief and apron all in white, as well as leather or canvas shoes; on the rough processing of groceries and on washing dishes also an apron, gloves and rubber or plastic footwear
2. On meat loading and unloading - working smock or trousers, shirt, cap or kerchief and hood all in white, apron, boots or rubber or plastic galoshes. In rooms with temperature below 0°C workers wear white workwear over the protective suit.
3. On bread and bakery products loading and unloading - trousers or skirt, shirt or blouse/smock, cap or kerchief and apron all in white, as well as leather or canvas shoes
4. In stockrooms and shops:
  - a) working with fruit and vegetables - light color apron
  - b) working with other groceries - light color apron; working with fresh meat, meat products, bread, bakery products and sweets beside the apron also a cap or headband; working with fresh fish also a rubber or plastic apron beside the aforementioned. The headband should be large enough to cover the hair starting from the forehead scalp line to the head vertex. Footwear should be rubber or canvas shoes, ie. rubber or plastic boots when working with fresh fish.
5. Working on scattered goods packaging - trousers or skirt, shirt or blouse/smock, cap or kerchief and apron all in white, as well as leather or canvas shoes



**Picture 23: Protective knit wire gloves for butchers protect against cuts.**

Usually it is used only one glove, on the hand holding the meat. The glove should be disinfected with special attention.

6. In restaurants, snack bars and catering facilities:
  - a) food and drink serving - trousers or skirt in color, light colored shirt or blouse/apron. When only drinks are served it is appropriate to wear a light colored apron instead of working uniform.
  - b) pouring and preparation of drinks - skirt or blouse and light colored apron. The head of the restaurant room, the head of the waiters and the head of the servings may wear suit, tuxedo or tailcoat, ie. suit with skirt or dress in black or other color.
7. Cleaning and maintenance of storage tanks for milk, beer, drinks and similar - working smock and a coverall with cap or kerchief in light color, rubber or plastic boots.
8. Cleaning working and auxiliary rooms or areas - working smock and cap or kerchief, rubber or plastic apron and gloves and water resistant footwear.

The working clothes need to be made of cotton fabric suitable for washing at 90°C and ironing.

It is necessary to ensure at least 3 sets of working clothes and shoes according to the season for each employee taking part in groceries manufacture and transport. Special working clothes need to be stored in locked wardrobe closets and in separated rooms intended as changing rooms only. In smaller buildings exceptionally, the wardrobe closets can be placed in a part of the passage room previous to the toilet or other auxiliary rooms. Each employee must have at his/her disposal a wardrobe closet that ensures keeping working clothes and footwear separated from the civil ones.

For issues of food safety, in catering industry disposable gloves are often used in processing food. **Disposable gloves should be worn while:**

- in direct contact with thermally processed food (eg. cutting, portioning and similar),
- in process of cold food preparation (making sandwiches, sliced, salads and similar),
- making sweets.

**It is necessary to change gloves regularly when:** working process is changed and after touching the waste container.

In catering industry disposable gloves are also being used while working with particular chemicals, ie. cleansers (protective equipment is defined in the Safety Data Sheets and the employer's instructions) and it is very important to wear them only when working with those substances, instead of wearing them all the time.



**Picture 24: Disposable latex gloves**



**Picture 25: Safety signs**

### DAJEROUS WORK SUBSTANCES

Dangerous (noxious) work substances are all the substances that while being manufactured, handled, transported, stored or used, release or produce infective, irritating, stinging toxic or other noxious dusts, smokes, gases, aerosols, vapours or fibers in such amount to harm the health of those being in contact with, or the environment. Dangerous substances are also all the other substances able to endanger human health, life and cause material damage by any way.

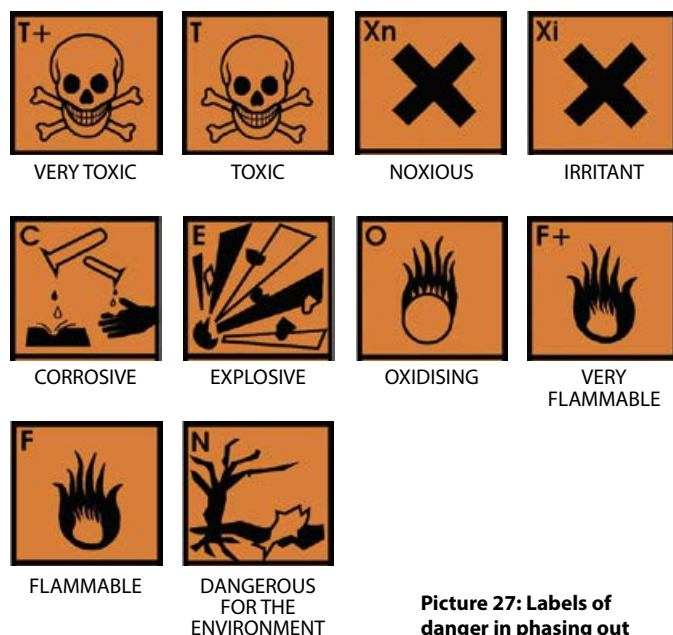
General rules for injury risk reduction are: 1. Make sure all the packaging and containers are correct; 2. Keep the dangerous substances in appropriate containers only and mark them correctly; 3. Avoid lips and eye (skin) contact; 4. Work carefully, read the instructions and SDS (Safety Data Sheets); 5. Practice high standards of personal hygiene.

## CHEMICALS

Chemicals in use in catering industry are cleansers, abstergents and disinfectants, as well as laundry detergents. Some of these chemicals are defined as dangerous and labeled by hazard pictograms. The European Union has accepted the recommendations of the United Nations regarding the Global Harmonized System for Classification and Labeling of Chemicals, and has included the internationally accepted GHS criteria in EU regulations. This has resulted in the CLP Regulation (n°1272/2008) introducing a new system for classification, labeling and packing of substances and mixtures, and replacing the existing signs of danger with new pictograms. The new pictograms inside a white rhombus with a red frame will replace the orange square signs of danger that have been applied under the old legislation. Since December 1<sup>st</sup> 2012 some substances and mixtures are already being labeled according to the new legislation, while the old signs of danger may be used until June 1<sup>st</sup> 2017 for those labeling mixtures already on market.



Picture 26: New hazard pictograms



Picture 27: Labels of danger in phasing out



- Explosive chemicals
- Self-reactive chemicals
- Organic peroxides A, B



- Flammable chemicals
- Self-reactive chemicals B-F
- Pirophoric chemicals
- Self-dissolving chemicals
- Chemicals that release flammable gases in contact with water
- Organic peroxides B-F



- Oxidizing chemicals



- Gases under pressure
- Corrosive to metals



- Corrosive to skin
- Severe eye injury
- Acute toxicity 1-3



- Acute toxicity 4



- Irritating chemicals
- Skin hypersensitivity
- Toxicity for the target organ - one-time 3
- Hazard to the ozone layer
- Inhalation hypersensitivity



- Mutagenicity
- Carcinogenicity
- Reprotoxicity
- Toxicity for the target organ - one-time 1,2
- Toxicity for the target organ - repeated 1,2
- Danger of aspiration



- Danger to the aquatic environment

Picture 28: The hazard pictograms meaning

The most common routes by which the chemicals enter the organism are through the digestive system, respiratory system and skin, therefore it is very important to use the prescribed means of protection. The type of protective equipment which should be used depends primarily on the type of chemicals we come in contact with, on their amount or concentration, on physicochemical properties like aggressiveness, reactivity, aggregate state and similar, as well as on the way, speed and extent of absorption of these chemicals into the body.

SDS (Safety Data Sheets) were created for each hazardous chemical. The SDS provide exhaustive information on the substance or mixture used in the workplace. They provide employers and workers with information on chemical hazards including environmental hazards, as well as precautionary measures. The information provided in this document enables the employer to design active protection of workers, providing first aid in cases of poisoning, etc.

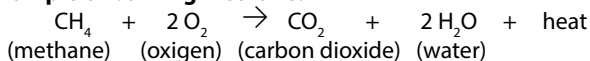
## FIRE PROTECTION

Basic knowledge of fire protection is obligatory for all workers regardless of the type of work. Burning is a chemical reaction between a fuel and oxygen, causing flame or embers and releasing heat.

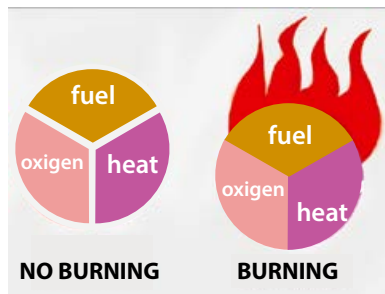
Burning process can occur if the following elements are present:

- fuel (in solid, liquid or gaseous state),
- oxygen (air),
- heat (ignition temperature)

**Example of burning methane:**

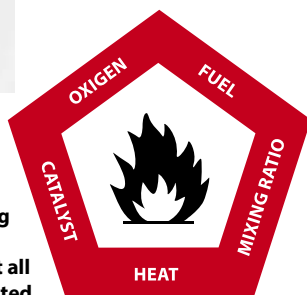


The fire conditions are usually represented by Firefighters with a fire triangle or a circle showing three basic factors required for fire.



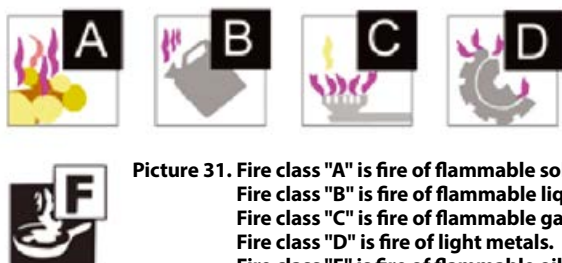
**Picture 29: Three factors of fire: fuel, oxygen, heat. Extinguishing is based on the removal of one factor at least.**

**Picture 30:** Beside the basic factors, the fire pentagon indicates the need for a certain relation between fuel and oxygen, as well as the catalysts (or inhibitors) that can affect the increasing or decreasing of the oxygen and fuel reaction. A model that would represent all the factors would be far more complicated.



## CAUSES OF FIRE

The leading causes of fire are: open flame, flammable objects, explosions, electricity, static electricity, thunder, lightning and heat caused by friction, pressure, impact etc.



**Picture 31.** Fire class "A" is fire of flammable solids. Fire class "B" is fire of flammable liquids. Fire class "C" is fire of flammable gases. Fire class "D" is fire of light metals. Fire class "F" is fire of flammable oils.

## COMPLETE AND INCOMPLETE COMBUSTION

When provided with enough oxygen, the main burning product is carbon dioxide  $\text{CO}_2$ . When burning at lower oxygen concentration (closed indoors and similar), beside carbon dioxide ( $\text{CO}_2$ ), carbon monoxide (CO) is also produced.

CARBON MONOXIDE (CO) is a toxic colorless, odorless, and tasteless gas which makes it even more dangerous. A volume concentration of merely 0,2 % CO in the inhaled air causes death after a short time.

## WAYS OF EXTINGUISHING

1. Reduce the fuel substance temperature to be lower than the ignition temperature by cooling.
2. Suppression will stop the contact of the fuel with oxygen from the air.
3. Remove the fuel from the area endangered by fire.
4. The anti-catalytic action of the extinguishing agent slows down or interrupts completely the merging of fuel with oxygen.

## FIRE PROTECTIVE MEASURES

Injuries, burns, poisoning, etc. may occur when extinguishing fire with an inappropriate extinguisher. Extinguishing fire near electrical devices and live installations is dangerous to life. If breathing problems occur while extinguishing fire in closed indoors, leave the room and the extinguishing process.

## FIRE EXTINGUISHING AGENTS

1. **Water** is the most efficient fire-extinguishing agent for solid matter that burns in embers. Electrical appliances and live installations in fire must not be extinguished by water;
2. **Foam** is mainly used for extinguishing flammable liquids, it floats on the liquid surface isolating the fuel from the oxygen and extinguishing thus the fire. It conducts electricity;
3. **Powder** is successfully used for fire extinguishing of liquids and gases, as well as for fire extinguishing on electrical devices and voltage installations up to 1000 V. The extinguishing powder can not extinguish the solid matter fire entirely. Special types of powder are used for extinguish light metals fire;
4. **Carbon dioxide ( $\text{CO}_2$ )** is used for extinguishing fire on electrical installations and live devices, as well as for extinguishing any fire in their surroundings. It is not suitable for firefighting smoldering fires or light metal fire. Carbon dioxide concentration above 5% is dangerous for human health. When exiting from a particularly wide nozzle, due to expansion the carbon dioxide's temperature is about  $-80^\circ\text{C}$  and can cause frostbites;
5. **Halotrons** are gases, halogenated hydrocarbons five times heavier than air, and some are dangerous to health in volumes of 3 % already. They are particularly used to firefight electronic equipment spaces, due to minor damage;
6. **Temporary fire extinguishers** are sand, soil and various covers. Covers are also useful when extinguishing fire on clothes worn by persons, whereby it is necessary to cover the whole burning surface.

## EXTINGUISHERS FOR INITIAL FIRE PROTECTION

They are used to extinguish smaller fires. There are two basic extinguisher types:

1. extinguisher with a bottle is a device having the tank under working pressure in the moment of propulsion gas discharge from the bottle. First the button should be pressed in order to activate the gas inside the bottle, and the generated pressure emits the extinguishing substance;
2. extinguisher under constant pressure is a device having the tank

constantly under working pressure. The extinguishers' maintenance consists in regular checking, periodical checking and control testing.



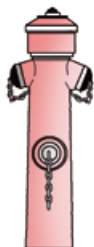
**Picture 32: Extinguisher under constant pressure for initial firefighting uses powder. Its parts are the tank, the activation lever, the safety fuse, the hose with nozzle and often a manometer, too. The extinguisher must be labeled with the expiry date information. It should be checked at least once per year by an authorized legal entity. The tank's constant pressure is about 15 bar.**



**Picture 33: Activating the procedure of the extinguisher for initial fire protection: 1. bring the device to an acceptable distance from the fire, hold the nozzle, 2. pull the safety fuse out, 3. direct the nozzle to the fire, 4. press the lever on the device and the lever on the hose nozzle (if having any)**

### HYDRAULICS AND WATER FIRE EXTINGUISHERS

There are external and internal types of hydrants. The external hydrants can be overhead and underground while the internal hydrants are wall-mounted. Near the hydrant a hydrant cabinet is set, containing equipment (hydrants keys, fire hoses, fire fighting extensions and nozzles).



**Picture 34. External overhead hydrant**

### FIRE EXTINGUISHING OBLIGATIONS

Any person who finds an immediate danger of a fire or has noticed a fire, is obliged to remove the danger, i.e. extinguish the fire if it can be done without endangering himself/herself or another person. If it cannot be done by one person, he/she is obliged to contact the nearest fire brigade, police office, information and alert centre and ambulance if needed.

### KITCHEN OIL AND GREASE FIRES

Grease and oil are made of fatty acid glycerides. The grease burning point ranges from 180° C up to 260° C. Boiling oils in pot or fryer burn at temperature from about 280° C up to 360° C.

- oil fires develop explosion if extinguished by water
- in fire oils behave as self-inflammable liquids

When in fire, oils behave as self-inflammable liquids. The burning temperature reaches very rapidly values over 700° C. The main reason that causes fire of fryers and similar frying devices in catering is heating the oil to the temperature of the self-ignition.

Here is what happens when oils and greases burn in fire: water does not bind with oil. Because of different specific weight, the water goes down while the oil floats on the surface. At temperature of 100° C water evaporates into steam, and the rapid increase of its volume causes an impact. The growing water steam expands very rapidly through the oil in the so-called grease explosion. The explosive ball's size is enormous even at small amounts of oil: 2 liters of oil and 1 liter of water create a fire pillar about 3 meters high and 2-3 meters large. Through the newly formed mixture of hot drops of oil and air, explosive combustion occurs and pressure rises. This spread of flames leads inevitably to spreading the fire to the entire space and severe burns can occur to people who have tried to damp it down. The fire continues until the temperature drops below the self-ignition temperature or until the oil burns completely. The oil cools more slowly and therefore the risk of re-ignition is increased when the fire is extinguished. Oil fires develop explosion if extinguished by water.

### EXTINGUISHERS

#### • Special fire blankets and device covers

Extinguishing oil fire is very demanding and difficult task since there is no specialized mean for extinguishing those fires. Water can be dangerous, while other extinguishers cannot cool the oil below the required temperature. The fire blankets are part of standard equipment in the restaurant kitchen, etc. They are supposed to cover the flame and therefore to suffocate the fire. The persons approaching the flame in order to cover it must be extremely cautious for being exposed to great danger. The flame can break through the blanket.

#### • CO<sub>2</sub> devices

They are not always able to extinguish grease fires. When fryers are in fire they may turn the flame off, but only for a short time. Due to the high thermal potential of the oil, the fire will re-ignite.

#### • Powder extinguishers

With powder jet, burning oil can be scattered all over the space. The powder jet should not be directed straight to the flame, but rather only a cloud of powder is to be entered into the flame volume. The powder extinguisher, too, does not provide the cooling effect, and therefore the fire recalls after the decline of extinguishing concentration in a fire atmosphere.

• **Preventive measures** is the most important and includes the following measures: the fryer in operation should not be left unattended; in case of suspicion of thermostat failure, etc., turn off the fryer urgently; the fryers need to be continuously checked and examined; before pouring a new oil into the fryer it should be thoroughly cleaned and dried; do not pour too much oil into the containers; do not overheat oil and grease; periodically change old and used oil; the groceries to be fried should be dry. Splashed oil can ignite on the heater or other heat source, or it can burn hands. A cover should always be kept near the frying pot or device. The maximum operating temperature of the fryer is 200° C, and the safety thermostat limit amounts 230° C.

### FIRST AID

#### GENERAL PROVISIONS

Injuries and illnesses at work are considered to be injuries, illnesses and other conditions of sickness occurred at work or related to work. First aid procedures are performed by trained workers according to the rules of medical profession. After the injured/ill person has been taken care by the prescribed first aid procedure, medical assistance must be provided. The worker must be necessarily transported to a health institution in case of the following injuries or conditions: head injury - in a sitting or lying position; neck wound - in a

sitting position with the head restraint; chest wound - in a semi-sitting position; abdomen wound - in a lying position with a raised headboard and semi-folded knees; jaw fracture - if the injured is unconscious, in a stable lying lateral position; neck spine fracture or spine damage - in a lying position on a hard flat surface with the entire body being immobilized; damaged chest bones - in a semi-sitting position; arm fracture - in a sitting or lying position with the arm being immobilized; pelvic fracture - in a lying position with immobilization; leg fracture, knee or ankle joint injury - in a lying position with immobilization as well as every time it's necessary.



**Picture 35:** The contents of first aid cabinets are prescribed by the rulebook. The consumed content needs to be replaced. Check the expiry date.

## WOUNDS

Unless otherwise prescribed for particular wound types, first aid for wounds includes: removing clothes or shoes from the body part by cutting by seams; stopping the bleeding; covering the wound with a sterile gauze and bandaging; placing the injured person in a proper position with regard to the type, size and location of the wound and the general condition.

**For open (external) neck wounds** first aid also includes: covering the wound with multiple layers of sterile gauze and bandaging; if the bleeding cannot be stopped by exerting finger pressure on the supply artery, it is necessary to tamponize the wound or to exert a direct finger pressure into the wound itself.

**For open (external) chest wounds** first aid includes: covering the wound with multiple layers of sterile gauze, bandaging and covering with a material which doesn't allow air to pass (rubber canvas, plastic foil, wide band strips and the like) that should be fixed by bandage.

**For closed (internal) chest wounds** first aid includes placing the injured person in a semisitting position and transporting her/him in the hospital.

**For abdomen wounds with organs spilled from the abdominal cavity** first aid also includes: bandaging the spilled organs with a sterile gauze and laying them on the unharmed part of the abdominal wall instead of bringing them back in the abdominal cavity. It must not be done: cleaning the wound surface nor the clotted blood from the wound edges; removing the foreign particles from the wound; touching the wound by fingers or other objects; rinse the wound with fluid, sprinkle with powder or grind with grease.

When first aiding the injured person having a **chest wound**, only mouth-mouth or mouth-nose method are allowed.

When first aiding the injured person having an **injury of nose, tongue, jaw and upper respiratory tract** the injured person must not be treated by first aid procedure intended for sudden breath discontinuation by the method of direct air injection into the lungs. The procedure is to be applied at the place where the injury occurred, without moving the injured person except for wounds on the neck and for those on the chest (open and closed), requiring primarily to place the injured person in a semi-sitting position.

In **amputation injuries**, the bleeding is stopped by applying the bandage firmly regardless of the strength of bleeding.

**For stopping other wounds bleeding:** a finger pressure on the blood vessel that brings blood in the wound; setting the compressive bandage on the damaged blood vessel or wound; rising the wounded extremity, unless it is fractured or if it has an internal bleeding; direct pressure on the wound in bleedings that can not be stopped by the above procedures (e.g. wounds in the thigh or neck area).

**The cut or torn part of the body** should be covered with a humid compression, put in a sealed plastic bag which should be put in iced water. The body parts should not be put in direct contact with ice, because it can cause tissue damage.

## BONE INJURIES

Unless otherwise specified for each type of damage, the first aid of bone injuries includes:

- removing clothes or shoes from the part of the injured body part by cutting by seams;
- stiffening (immobilizing) appropriately the body part on which the bone damage is;
- securing the tongue from being swallowed if fracture of the jaw bone occurs.

When first aiding bone injuries, the bones should not be adjusted. When first aiding **injuries of chest or spine or arm**, the injured person must not be treated by first aid procedure intended for sudden breath discontinuation by the manual (indirect) method. The procedure is to be applied at the place where the injury occurred, without moving the injured person except for the following cases:

- knee joint and ankle joint injury, when the injured person should be placed first in a lying position on a hard flat surface;
- ribs fracture, when the injured person should be placed first in a lying position;
- jawbone fracture, when the injured person should be placed first in a lying position face down, or in a sitting position with the head tilted forward;
- pelvic bone fracture, when the injured person should be placed first on a flat board lying on the back, with bent hips and knees and some pillows under and between the knees;
- neck bone injury, when the injured person should be placed first in a sitting position;
- chest bone injury, when the injured person should be placed first in a semi-sitting position;
- spine injury, when the manual immobilization of the neck should be done with back support and placing the injured person on a long board or a vacuum mattress.

The injured bones and joints are to be fixed (immobilized) in the position as they are found.

**Fixing the body parts** requires some procedures depending on the type of injury of the bone or joint, and they are:

- for skull bone fracture, placing the first bend on the head;
- for jaw fracture, fixing the jaw with triangular scarf placed under the chin and tying the ends of the scarf on the top of the head;
- for clavicle fracture, fixing the shoulders with triangular scarves;

- for scapula fracture, binding the arm to the chest;
- for upper arm fracture, fixing the arm with a splint and placing the arm in a triangular scarf tied around the neck, or binding the arm to the chest;
- for forearm fracture, fixing the forearm with a splint and placing the arm in a triangular scarf tied around the neck;
- for elbow joint injury, fixing it in the position as it is found;
- for wrist injuries and hand bones injuries, fixing the hand with a splint placed from the top of the fingers to the elbow in a semi-closed hand position and placing the arm in a triangular scarf tied around the neck;
- for thigh fracture, fixing the thigh with three splints, placing the first from the top of the toes under the foot and heel to the thigh, the second on the inner side of the leg from the foot edge to the groin, and third on the outside of the leg from the foot edge to the armpit;
- for lower leg fracture, fixing it with three splints, placing one below the heel up to half thigh and other two of equal length inner and outside of the leg from the foot edge up to half thigh;
- for knee joint injury, fixing it with a splint in the position as it is found;
- for ankle joint injuries, fixing it with a splint placed around the heel to the lower knees and the other from the top fingers to the knees;
- for ribs fracture, fixing the thorax by wrapping the bandage around it or wrapping the thorax with an adhesive tape, at the deepest exhalation of the injured person;
- for pelvic bone fracture, fixing the lower part of the body by wrapping it on the board where the injured person is placed;
- for spine injury, fixing the whole body by wrapping it on the board.

## EYE INJURIES

The first aid for eye injuries includes the application of the following procedures:

- placing the injured person in a sitting position with the head tilted backwards;
- rinsing the eye with clean water if the injury occurred by acid or alkaline action or by foreign body in the eye which can be removed by rinsing;
- covering the eye with a sterile gauze and placing a band if the foreign body can not be removed by rinsing or if the tissue at the front of the eye is damaged.

When giving first aid, you must not:

use anything except water to remove a foreign body from the eye; put medicines in the eye.

## BRAIN CONCUSSION

The first aid for brain concussion includes:

- placing the injured person in a stable lateral position;
- insurance and control of air passage through the respiratory tract of the injured person.

## BURNS

The first aid for burns, due to high temperatures, includes:

- removing clothing from the damaged part of the body, unless it is stuck to burns;
- placing the burned body part under the jet of pure cold water or immersing it in cold, clean water until the pain stops for at least 10 minutes;
- covering the damaged part of the body with a sterile gauze and banding, unless it is a burn on the face;
- if the burn occurs on the arm or leg, they should be immobilized in the same way as for bone injuries;

- warming the injured person with a warm cover;
- giving her/him to drink non-alcoholic beverages in sufficient quantity.

If the burned clothing is stuck to the burn, the first aid involves the following procedures: wrapping the injured by damp cloth over clothing, as well as all the mentioned procedures. When giving first aid no bladders on the skin should be bled, no medicines, greases and oils should be put on the burn.

## DAMAGES DUE TO ACTION OF ACID OR ALKALI

The first aid for damages due to action of acid or alkali includes:

- removal of the clothes wet by acid or alkali;
- cleansing body parts: if acid or alkali gets in the eye, it should be rinsed by clean water or saline; if acid or alkali gets into mouth or nose, it should be rinsed by water or saline; if acid gets on another part of the body, rinse it by water and diluted alkaline solution (sodium bicarbonate, alkaline mineral water, milk); if alkali gets on another part of the body, rinse it by water and dilute acid solution (lemon juice, diluted acetic acid);
- covering the damaged part of the body with a sterile gauze and banding;
- administering the appropriate drug in case of damage;
- swallowing acid or alkali requires urgent medical help on the emergency department

DO NOT induce vomiting in poisoning with acids, alkalis, benzene, petroleum, color solvents, and foaming agents.

If the intoxicated person can swallow, water should be given to her/him immediately but only in the first few minutes. It is wrong to give any drink after more than a few minutes from poisoning. Do not apply neutralizing agents (bases).

## FREEZING AND FROSTBITES

The first aid for freezing and frostbites includes:

- placing the injured person in a room at a temperature of around 15° C;
- removing humid or frozen clothes or shoes from the injured person;
- warming the injured part of the body by a lukewarm bath, unless there are bladders on the skin;
- covering the injured part of the body with a sterile gauze and banding not too tightly;
- if the injury occurs on the arm or leg, they should be immobilized in the same way as for bone injuries;
- warming the injured person with a warm cover with a light massage of the uninjured parts of the body;
- giving her/him to drink warm non-alcoholic beverages;
- apply the artificial respiration if the injured person is unconscious and does not breathe.

When giving the first aid no bladders on the skin should be bled, the injured parts of the body should not be massaged or touched, any alcoholic drinks should not be given to the injured person.

## FIRST AID FOR DISEASES

As work-related diseases are considered: poisoning, heat stroke and sunstroke, electric current shock, decompression sickness, damages caused by ionizing radiation, drowning, sudden breath discontinuation, sudden heart failure, shock, choking, food choking, seizure of epilepsy, unconsciousness, food poisoning and bite of poisonous insects and snake.

## POISONING

In the case of poisoning caused by chemical compounds, the following steps should be applied:

- bringing the poisoned person from the environment in which the poisoning occurred (closed atmosphere) to fresh air;
- removing clothes and shoes soaked with poisonous fluid; ensure as urgent as possible medical assistance.

### The procedure with the person who swallowed a poison:

If the person is unconscious, check the breathing and blood flow and if necessary start resuscitation measures, making sure not to come into contact with the poison (use gauze for CPR - artificial respiration). Unconscious breathing person should be turned to the side-lying position.

If the person is conscious, try to induce vomiting by irritating the pharynx with a finger. Alternating the sips of water with the vomiting may pump the stomach.

DO NOT induce vomiting to a person who is not conscious or who is opposed.

The poisoned person should drink 2-3 spoons of medical charcoal (active charcoal, carbo medicinalis) diluted in a glass of water. Medical charcoal bonds to itself many types of poisons and thus prevents their resorption in the intestines. It should be an integral part of a home pharmacy. It must not be used in case of poisoning with acids and alkalis.

## ELECTRIC CURRENT SHOCK AND THUNDERSTROKE

For electric current (and thunder) shock the first aid includes:

- exclusion of the victim from the electrical circuit;
- CPR, at most 5 minutes after the electric shock;
- in case of heart failure, external heart massage and placing the injured person in a side-lying position;
- after the return of consciousness, warming up the body and giving a refreshing drink.

## SUDDEN BREATH DISCONTINUATION

For sudden breath discontinuation the first aid includes:

- placing the person on a flat surface in a lying position on the back, with the head backward;
- loosening the clothes if they tighten the body;
- removing blood and other contents that are found in the respiratory tract;
- giving artificial respiration using one of the direct method of "mouth on mouth", "mouth on nose", or "manual methods of Holger-Nielsen", unless a certain artificial respiratory method is prohibited for the related injury or disease depending on wounds and bone injuries.

## SUDDEN HEART FAILURE

For sudden heart failure the first aid includes:

- placing the person on a hard flat surface in a lying position on the back;
- external heart massage until the heart starts beating in a regular rhythm, always performing it simultaneously with the artificial respiration.

## SHOCK

For shock condition first aid includes:

- placing the injured person in a lying position on the back, without pillow, rising the legs if the face is getting pale;
- ensuring complete quiescence of the patient;

- warming the body with covers;
- giving her/him hot non-alcoholic beverages (except for concurrent abdominal organs injuries).

## CHOKING

For choking the first aid includes:

- removing blood and other contents from the mouth;
- placing the injured person in the proper position, ie. if she/he is unconscious then in a stabile side-lying position with the head tilted backwards, and if due to the injury should not be in such a position, then lying on the stomach; if she/he is conscious, in a sitting position with the head resting on the palms and elbows on the knees.

## CHOKING ON FOOD

For choking on food the first aid includes ejecting bits of food from the respiratory pathway by sudden and strong pressure of the upper part of the abdomen towards the thorax.

## UNCONSCIOUSNESS

For unconsciousness the first aid includes:

- bringing the injured person to fresh air and placing her/him in a lateral position;
- loosening the clothes if they tighten the body;
- cooling the face and the chest of the injured person with cold water;
- giving her/him refreshing non-alcoholic beverage after the return of consciousness.

## FOOD POISONING

First aid for food poisoning:

- removing the poisoned food by causing vomiting;
- ensuring quiescence of the patient.

The vomiting should not be caused if the poisoned person is unconscious or if she/he has swallowed an acerb substance.

## SWALLOWING DETERGENTS

If detergents happen to be swallen the intoxicated person should be given an anti-foaming agent (against flatulence) from the first aid cabinet, following the enclosed instructions. If conscious, give her/him some water to rinse the oral cavity (to flush the water in the mouth and then spit it out). Vomiting should not be caused intentionally (but should also not be stopped if it occurs spontaneously). In order to prevent spontaneous vomiting use the anti-foaming agent. Call for ambulance immediately.


## REFERENCES

- Rulebook on providing first aid to workers;
- Plavšić F., Lovrić Z., Wolf Čoporda A., Ježić Vidović I.Z., Čepelak Dodig D., Gretić D., Đurašević S., Siguran rad s kemikalijama (Safe working with chemicals), Zagreb 2014.

The provided data is for information purposes only. The person giving first aid should attend and pass the First Aid Course and periodically renew knowledge with new techniques and resources.

### SDS (SAFETY DATA SHEETS)

For each agent that is being used or that is possible to get in contact with it is necessary to obtain the SDS (Safety data Sheets) where all the security measures are listed. Here is an example of an abbreviated list of cleaning agents in catering:

SUBSTANCE / MIXTURE IDENTIFICATION AND COMPANY INFORMATION	
<b>Product identification</b>	
Trade name:	CLEANING AND DISINFECTING AGENT XY
<b>Appropriate identified purpose of the substance/mixture and not recommended purposes</b>	
Use:	for cleaning and disinfecting: - surfaces and equipment in all branches of food industry - type of biocidal product 4; - surfaces in public health - type of biocidal product 2. Used either manually or by machine at concentrations 0.2-1.5% (2-15 ml/L water) at temperature 20-40 °C, for 15-30 min. After cleaning the surface rinse thoroughly with water.
Not recommended purposes:	It is recommended the usage specified in the previous column. Other ways of using are not recommended.
Reason for non-use:	No data.
DANGER IDENTIFICATION	
<b>Substance/mixture classification</b>	
Classification according to Regulation (EZ) no. 1272/2008 (CLP)	
Danger class and category code:	Warning sign*:
Skin corrosion, 1B cath.	H314
Ac. tox. wat. env. cath. 1	H400
Additional notes	No data.
Label elements according to Regulation (EZ) no. 1272/2008 (CPL)	
Pictograms	
Signal word	<b>HAZARD</b>
Hazard Statement	H314 Causes severe skin burnings and eye injuries. H400 Very toxic to aquatic life.
Precautionary Statement	P273 Avoid release to the environment. P280 Wear protective gloves/ protective suit/ eye protection/ face protection. P301+330+331 IN CASE OF SWALLOWING: rinse the mouth. Do not induce vomiting. P303+361+353 IN CASE OF SKIN CONTACT (or hair contact): remove immediately all the infected clothes. Rinse the skin with water/showering. P305+351+338 IN CASE OF EYE CONTACT: rinse carefully for a few minutes. Remove contact lenses if worn and if easily removable. Continue rinsing.
FIRST AID MEASURES	
<b>First aid measures description</b>	
General remarks	If symptoms occur or if they do not withdraw, consult the doctor.
After inhalation	Bring the person to fresh air.
After skin contact	Rinse the skin with running water for about 15 minutes, if the symptoms persist seek medical assistance.
After eye contact	Remove the contact lenses if worn. Open the eyelids with clean hands and rinse with running water for at least 20 minutes. If the symptoms persist seek medical assistance.
After swallowing	DO NOT induce vomiting! Rinse the mouth with water and bring the intoxicated person to the nearest ambulance.
Personal protection of the person giving first aid	After first aid is given, wash the skin areas that have been exposed with water.
The most important symptoms and effects, acute and delayed	
After inhalation	They are not expected if used properly.
After skin contact	Redness, burning, pain, if prolonged exposure possible burns.
After eye contact	In case of prolonged direct contact, possible tearing, redness, burning, pain and swelling (burns), cornea damage.
After swallowing	Nausea and vomiting.
Emergency medical assistance and special treatment	
No data.	

FIRE PROTECTING MEASURES	
<b>Extinguishers</b>	
Adequate agents	Foam, carbon dioxide, powder.
Inadequate agents	Water jet.
<b>Special hazards arising from the substance or mixture</b>	
Hazardous combustion products	Unknown.
<b>Suggestions for fire fighters</b>	
Adapt the firefighting methods to other chemicals in the storage. For indoor fires fireproof suit and a self-contained breathing apparatus with an open circuit of compressed air (HRN EN 137).	
ACCIDENTAL DISCHARGE MEASURES	
<b>Personal precautions, protective equipment and procedures in case of danger</b>	
For non-intervention staff	
Protective equipment	Use the protective equipment.
Accident prevention procedures	Avoid contact with skin and eyes.
Accident procedures	Prohibit access to unauthorized persons.
For intervention staff:	
Use the protective equipment.	
<b>Environment protection measures</b>	
Prevent leakage and spillage into the environment (water, soil and air). In case of major leaks, inform DUZS at 112.	
<b>Methods and materials for spreading prevention and cleaning</b>	
For fencing, covering, sealing	In case of spillage, pour the spilled material with an inert absorbent material: soil, sand, sawdust or mineral absorbent material and place as such in a tightly closed container.
For cleaning	After collecting the chemical, wash the contaminated place with water. Hand over the waste to legal persons authorized by the Ministry of Environmental Protection.
Other informations	None.
HANDLING AND STORAGE	
<b>Precautions for safe handling</b>	
Precautions	
Fire prevention measures	No special measures are needed.
Measures for preventing aerosol and dust	Not applicable.
Environment protection measures	Keep the product tightly closed in the original packaging. Prevent leakage and spillage into drains, drainage systems, water courses or soil.
Advice on General Hygiene in the Workplace	
Use the prescribed protective equipment.	
It is forbidden to eat, drink and smoke in the room where this product is handled. Wash hands after work and before break.	
<b>Safe storage conditions, considering possible incompatibilities</b>	
Technical measures and storage conditions	Closed storage space in well-sealed original packaging.
Container materials	Original packaging of the manufacturer. No overpacking is permitted.
Storage space and containers requirements	No special requirements.
Suggestions for equipping a warehouse	Provide adequate storage conditions and mark the area in accordance with the Chemicals Act.
Other storage conditions data	Protect from freezing.
SUPERVISION IN EXPOSING / PERSONAL PROTECTION	
<b>Supervision in exposing</b>	
Appropriate control devices	
Measures to prevent exposure during the recommended use	Observe the usual hygienic measures and safe handling of chemicals. Keep away from food, beverages, and fodder. When handling the product, smoking, taking meals and drinks is forbidden. Avoid skin and eye contact. Wash hands after each break.
Structural measures to prevent exposure	No special requirements.
Organizational meas. prevent exp.	No special requirements.
Technical meas. prevent exp.	No special requirements.
Personal protective measures, eg. personal protective equipment	
Eye / face protection	It is not required if you follow the recommended instructions. Protective eyeglasses (HRN EN 166) if there is a possibility of spraying or spilling.
Skin protection	
Hands protection	Protective PVC gloves (HRN EN 374).
Other body parts protection	It is not required if you follow the recommended instructions.
Respiratory protection	It is not required if you follow the recommended instructions.
Thermal hazards	Not applicable.



# FIRST AID

What to do when you see an injured person?

Emergency	112
Ambulance	194
Fire department	193
Police	192



# 194

## At first

- keep calm
- ensure the place of accident
  - think of your own safety
- remove carefully the person from the danger zone

## Call for help

tell:

- where, what
- number of injured, type of injury
- wait for questions

### EXAMINE WHETHER THE PERSON IS CONSCIOUS

- call loudly, touch, shake

in case of reaction

### HELP ACCORDING TO THE SITUATION

- treat the wound
- stop the bleeding and similar

### OBSERVE CONSCIOUSNESS AND BREATHING

if no reaction

### EXAMINE WHETHER HE/SHE IS BREATHING

- place the person on the back
- tilt the head backward, raise the jaw
- watch, listen, feel the breathing (it should be permanent)

in case of reaction



### PLACE IN LATERAL POSITION

- observe if the breathing is continuous



if no reaction

### RESUSCITATION MEASURES

- 30x heart massage
- 2x exhale air
- repeat

- Place the heel of one hand IN THE MIDDLE of the patient's chest.
- On this hand palm place the other palm.
- Apply compression vertically to the chest with extended arms (do not bend the elbows) and press down the chest bone for 4-5 cm.
- After each compression, release the pressure without separating the hands from the chest of the injured person. Repeat for 100 times in a minute.
- Compression and release duration should be the same.



### 2X EXHALE AIR REOBSERVE THE SIGNS OF LIFE (eg. moving / coughing)

- After 30 compressions put your hand on the forehead of the injured person and tilt it gently backwards, keeping the thumb and the forefinger free to clog her/his nose, rise her/his chin.
- If you are afraid of infection do only the heart massage: it should be continuous of 100 times in a minute frequency. It should be stopped only when the injured person starts to breath normally.

### Continue reanimation until:

- professional help arrives and takes over the reanimation
- injured person starts breathing **NORMALLY**

### CAUTION

For the first few minutes after heart failure the injured person can hardly breathe or rarely and loudly take the breath. This is not normal breathing. The person may still be in consciousness or may suddenly turn blue and collapse. In both cases resuscitation measures should be started IMMEDIATELY.



STUDENT  
CENTRE  
RIJEKA

approved by: Assistant Professor Alen Protic, head of the Emergency Medical Center, KBC Rijeka



# EXERCISES FOR MUSCLE RELAXATION IN COMPUTER AND CASH REGISTERS WORK



## LATERAL TILT OF THE NECK

- relax your shoulders and arms
- tilt the head, first on one side and then on the other
- hold for 5 seconds on each side



## STRETCHING THE NECK

- sit or stand with relaxed arms
- tilt the head gently forwards
- hold your shoulders relaxed and lowered
- hold the position for 5 seconds



## SHOULDER SHRUGS

- raise shoulders toward your ears
- hold
- relax downward to a normal position



## UPPER BACK STRETCH

- interlace fingers behind your head with elbows out
- pull shoulder blades together
- hold for 5 seconds, then relax



## WRIST/FOREARM STRETCH

- place hands palm to palm (fingers toward chin) keeping elbows even
- move hands downward keeping palms together and elbows even
- hold for 5-8 seconds



## WRIST/FOREARM STRETCH

- place hands palm to palm
- rotate palms around until they face downward keeping elbows even
- hold for 5-8 seconds



## HAND/FINGER STRETCH

- separate and straighten fingers
- hold for 10 seconds
- bend fingers at knuckle and hold for 10 seconds
- separate and straighten fingers again



## HAMSTRING STRETCH

- while sitting hold onto upper left leg just above and behind the knee
- bend your left knee and pull to your chest
- hold for 15-20 seconds
- repeat with the right leg



## LATERAL STRETCH

- hold the left elbow with right hand
- gently pull the elbow behind your head to feel stretch in shoulder or upper arm back
- hold for 10 seconds
- do not overstretch or hold breath
- repeat for the right side



## UPPER BODY STRETCH

- interlace fingers, turn palms upward and straighten arms above the head
- elongate the arms to stretch your rib cage
- hold for 10-15 seconds and breath deeply



## BACK STRETCH

- lean forward
- keep the head down and the neck relaxed
- hold the position for 10-20 seconds
- use hands to push yourself back up



## BACK AND HIP STRETCH

- bend left leg over right leg and look over left shoulder
- place right hand on the left knee and apply pressure
- repeat for the right side

Exercises should be performed slowly, without any sudden rush. Pain after exercise means that exercises have been performed incorrectly. Regular exercise is the most important thing to prevent unpleasant pain caused by long-term computer work.

Approved by: M.Sc. Darko Kraguljac, physicist specialist - KBC Rijeka

If you feel: pain, discomfort, ear ringing or buzzing, loss of strength or stiffness  
STOP EXERCISING AND CALL THE DOCTOR.



Rijeka, February 2018