

Basic principles for the handling of chemical agents and chemical preparations

- Prior to commencing any activity with chemical agents (hereinafter referred to only as “agents”) and chemical preparations (hereinafter referred to only as “preparations”) (or with equipment containing agents and preparations), acquaint yourself with the characteristics and dangerous behaviour of these agents and preparations (e.g. from the agents and preparations safety sheets or other similar documents), with the recommended ways of handling, including safety and preventative measures, with the principles of First Aid and with the local operational and health and safety rules and regulations (operational rules and regulations of the workplace, instructions for operating machinery and equipment, etc.).
- During each and every activity with agents and preparations use the personal protective equipment provided by the employer on the basis of the evaluation of work risks and actual workplace conditions.
- When working with dangerous agents and preparations, especially those that are explosive, flammable, toxic or carcinogenic, in areas or locations where unauthorized persons might gain access, secure the workplace and mark it with warning colours, marks and signs.
- When working in closed spaces, containers and tanks where gases, vapours or particles from dangerous agents and preparations can occur, safeguard the workplace from the outside with another person (outside of the area of danger) and ensure the continuous monitoring of the concentrations of dangerous agents and the minimum concentration of oxygen in the air.
- Prior to commencing the work, equip the workplace with a sufficient quantity of decontamination equipment, First Aid equipment and personal protective equipment for work purposes, as well as for emergencies.
- Prior to the manual handling of dangerous agents and preparations, check the state of handles or lifting attachments, whether the containers are securely closed and the strength of the coverings. Avoid carrying on the back or in the arms, as well as dragging or pushing on floors or ramps. When pumping and turning with the use of machinery equipment or during handling with the use of forklifts or other means of transport, follow the local operational and health and safety rules and regulations which deal with the safety of carrying out each and every manipulation.
- At individual workstations, machines and equipment ensure sufficient space for work and handling to enable safe execution of required operations; check the working order of the ventilation and exhaust systems for agents and preparations’ gases, vapours and particles and prevent the flow of fluids into the hollows and recesses of machines and equipment or floors, dust settling on the surface of objects and constructions, accumulation of gases and vapours in the corners of rooms that are difficult to air.
- Store agents and preparations only in places designated for that purpose, in the specified quantity and with adequate coverings and with marked contents and safety markings according to the agents and preparations behaviour. Prevent the joint storage of agents and preparations that can react dangerously together.

- Examples of the main principles for the safe handling of some categories of dangerous agents and preparations:
 - when preparing alkali solutions, pour or add alkali into water (fluid) while continuously stirring or cooling down,
 - avoid contact of hydroxide solutions (alkali lye) with aluminium objects (possibility of hydrogen development),
 - when emptying containers (demijohns, barrels) with alkali, use suitable dumping equipment, do not carry alkali in open containers,
 - do not use wood shavings or other organic matter to remove spilled nitric acid, hydrogen peroxide and other strong oxidizing agents,
 - place textile material soaked with coating compositions, varnish and oils into closed metal containers,
 - when working with flammable fluids, eliminate the development of static electricity and mechanic or electric sparking; if fluids are spilled, immediately turn off gas appliances and electricity, declare no entry to unauthorised persons, air the area and use suitable absorbing materials for clearance according to the type of agent; it is prohibited to wipe these flammable fluids off floors with synthetic materials (danger of static electricity),
 - place alkali metals under a layer of petroleum, white phosphorus under a layer of water, regularly check and top up loss of fluid,
 - prevent contact of alkali metals and hydrides of alkali metals (including calcium carbide) with water.
- Do not store dangerous agents and preparations, especially toxic and caustic ones, in containers commonly used for consumables and fodders.
- Until the point of clearance or liquidation, handle empty coverings from agents and preparations in the same way as if they were full.
- Equipment, its parts (tanks, containers, transport coverings) and spaces where dangerous agents and preparations occur and are used must be marked with necessary safety markings (colours, marks and signs) pointing out the sources of risks and the dangerous behaviour of agents and preparations.
- When handling agents and preparations the following conditions are important:
 - knowledge of the behaviour and effects of the used agents and preparations and awareness of permanent danger when working with them,
 - induction training and repeated training of workers to the required level, or ensuring professional supervision or control over work as it is carried out,
 - observance of health and safety rules and regulations and instructions for work with agents and preparations, principles of personal and operational hygiene and use of personal protective equipment,
 - good working order of safety and protective equipment as well as warning systems,
 - prevention of the leakage of agents and preparations into work places, observance of exposure limits, provision of workplaces with sufficient quantities of decontamination equipment according to the type of agent and preparation and presumed type of leakage,
 - maintenance of knowledge (and practical skills) in First Aid, decontamination procedures, procedures for dealing with emergencies.

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