**Safe Work Requirement**

HANDLING AND STORING HAZARDOUS MATERIAL PROCEDURE

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| Overview There are over 500 types of flammable and combustible liquids, liquefied gases and other liquids having lethal or dangerous properties which are utilized, transported, transferred or stored in the industry today. These hazardous materials have varying degrees of danger associated with their storage, handling, transfer and transport. These dangers range from very slight to very hazardous depending on the product. Many chemicals can be toxic to the human body; they can cause breathing problems or damage brain tissues, lungs, skin or the nervous system. The degree of risk depends on the way chemicals are handled and the precautions taken while handling them. Classification The toxicity of a substance is described by its biological effects on a living organism. The extent to which a substance is considered hazardous relates directly to the likelihood of damage to humans coming into contact with it.  The body has many ways of dealing with toxic chemicals; some are removed by the liver and kidneys, although these organs may themselves become damaged in trying to protect the rest of the body. It is therefore of the utmost importance to know how a certain chemical substance is going to affect the human body, under a given set of circumstances.  These flammable and combustible products are broken down into six (6) categories as follows:  Description: C:\Users\USER\AppData\Roaming\Tencent\Users\1045450198\QQ\WinTemp\RichOle\TO0$B`ZJUK{XFDWZA`9]Z@U.png Hazard Assessment      The chemical manufacturer is responsible for assessing the two types of hazards associated with chemicals. These are:  1. Physical hazards - substances that burn easily, explode, or react in some way. 2. Health hazards - substances that may be irritating, corrosive, sensitive or toxic.   Material Safety Data Sheets (MSDS) shall be requested for chemicals and products purchased by the company. We will rely on the evaluation performed by the manufacturer on chemicals and products purchased by the company. This information will be maintained at each work site and made available to all employees working on that work site. The MSDS sheets will be maintained in a binder and "Right-to-Know" station signs will be visibly posted.  The purpose of the assessment is to enable valid decisions to be made about the measures necessary to control substances hazardous to health arising from any work activity. The following will form the basis of the assessment:  1. What hazardous substances are present? 2. What harmful effects are possible? 3. Where and how are the substances actually used or handled? 4. Who could be affected, to what extent and for how long? 5. How likely is it that exposure will happen? 6. How does the level of exposure compare with recognized standards? 7. What action needs to be taken?  The assessment will take the following format:  1. All jobs and chemical substances will be listed. 2. Each job will be described and those with significant risk of exposure to hazardous substances identified and the hazards quantified. 3. The jobs identified as having a significant risk will be analyzed. 4. A description of how each substance is handled and controlled during each task is recorded on F0782, Job Safety Analysis 5. Actions or improvements required to reach occupational exposure limits or to provide better occupational hygiene practice will be noted. If further monitoring is necessary, this will be recorded. 6. The assessment will be reviewed when the work to which it relates has changed significantly.  Control Measures The company will take such measures to ensure that exposure to identified hazardous substances is prevented, or if this is not reasonably practicable, adequately controlled.  This may mean preventing or controlling exposure by one or more of the following:   1. Removing the hazardous substance 2. Substituting with a safe or safer substance. 3. Totally enclosing the process or work. 4. Using partial enclosure and extraction equipment (Local Extraction Ventilation). 5. General ventilation. 6. Reducing the period of exposure. 7. Personal Protective Equipment (e.g. respirators, dust masks) will only be used as a means of protection in those situations where other measures cannot adequately control exposure. 8. For unlisted substances, specialist advice shall be obtained.  Physical Examinations Physical examinations shall be conducted for company employees who are engaged in any hazardous activity, which is applicable to the Company.  Medical examinations shall be carried out at intervals stipulated by the company. Personal health records shall be made available to the employee and these records shall be retained for a period of time, as required by CLIENT physical Examinations requirements Personal Protection Equipment The protection would normally consist of chemical suits, protective footwear, gloves, eye protection and respiratory protection. Hazard Communication - Right To Know It is the intention of ECDC to conduct its operations in such a manner that not only complies with health, safety and environmental measures required by law, but also to act positively to prevent injury, ill health, damage and loss arising from its operation.        Material Safety Data Sheets (MSDS) The MSDS for all chemicals will be maintained at the work site. The MSDS form provides more detailed information about a product than the warning label. Copies of MSDS's will be maintained at the Right-to-Know stations.  The following information is provided on all MSDS's:   1. **Identification of the Chemical:**   This section gives the chemical name, trade name, and any synonyms for the chemical. The CAS number and formula are also given.   1. **Physical and Chemical Characteristics of the Hazardous Chemical:**   This section will help identify the substance by observing its physical properties. It describes the chemicals, appearance, odor, boiling point, pH and other technical data.   1. **Hazardous Ingredients or Components:**   Listed in this section are any hazardous ingredients that make up at least one percent (1%) of the total mixture. The Threshold Limit Value (TLV) will be listed, as will be the Health Hazard, Flammability and Reactivity values.   1. **Fire and Explosion Hazard:**   This section gives information on fire control, flash point and flammability limits of the material.   1. **Reactivity Data:**   This section gives information on conditions and materials that could increase the hazard of the chemical. Some materials react dangerously or become more unstable when in the presence of other chemicals or under certain conditions.   1. **Health Hazard Data:**   The TLV, health effects and emergency or first aid procedures are listed in this section.   1. **Spill or Leak Procedures:**   This section lists the procedures for clean-up of material.   1. **Special Protection:**   This section lists the manufacturer's recommendations for personal protective equipment that should be used when working with the chemical.   1. **Special Precautions:**   This section details the required handling and storage procedures for the chemical. Hazard Communication Once the physical and health hazards are identified, manufacturers are required to communicate these hazards. This is accomplished by labeling containers. The labels can assist the employees by identifying the physical and chemical hazards of the products in their work areas. Safety precautions to be taken when working with the substance are also listed. The label must contain the following:   1. Appropriate hazard warning 2. The contents of the container 3. The name, address, and the emergency telephone number of the chemical manufacturer  Hazard Warning Labels Each container of hazardous material in the workplace must have a label, tag or mark which indicates the appropriate hazard warning. The Rig Manager or designated person will be responsible for ensuring that all chemical containers received on location have the proper warning label.   1. **Information on labels should include:** 2. What the substance is. 3. The chemical and trade names. 4. The risks involved in handling or using the substance. 5. The precautions to be taken. 6. A pictorial representation of the main hazards.   Hazards that should be indicated on identification labels include: flammable, explosive, toxic, corrosive, radioactive, harmful/irritating, and oxidizing substances.   1. **Information provided to employees shall include:** 2. The nature and degree of risks to health arising from exposure to hazardous substances. 3. What the control measures are and how to use them properly. 4. The monitoring procedure. 5. The role of health surveillance.   Instruction shall be directed towards ensuring that employees do not endanger themselves, or others, through exposure to hazardous substances. Hazard Training Training shall ensure that employees can apply and use the control measures, including any emergency measures.  Employees undergo a Hazard Communication / Right to Know training session that covers the following topics:   1. Identification of hazardous material 2. Toxicology 3. Types - mud, caustic, radiation 4. Respirators - particle masks, etc. 5. Material Safety Data Sheet (MSDS) 6. Sign sheet  Ingestion / Inhalation Swallowing a chemical will normally result in illness, thus food and drink should not be consumed in areas where chemicals are handled or stored. Smoking should always be prohibited in these areas. Contaminated clothing should always be removed and hands washed prior to consuming food or liquid. Precautions should be taken to protect laundry workers from contaminated clothing.  All chemical fumes, gases, vapors and dusts are potentially harmful, therefore appropriate precautions should be taken to avoid contact with them. Adequate ventilation should be ensured, this being either natural or mechanical. If respiratory protective equipment is required, reference should be made to the selection guidelines to ensure that the apparatus is suitable for the job it is expected to perform. In areas that are deficient in oxygen, or where contamination levels are high, positive pressure breathing apparatus should always be used. Combustible and Flammable Liquids  1. On ECDC job sites, the primary contact will be with combustible liquids, flammable liquids and compressed gases. Of these three categories the most common and most hazardous are the combustible and flammable liquids. 2. A Combustible liquid is any liquid with a flash point above 80°F (26°C). 3. A Flammable liquid is any liquid which gives off flammable vapors at or below 80° F (26°C). 4. Flammable and combustible liquids do not burn or explode, but the vapors they give off do. Flammable liquids have a greater tendency to give off vapors than do combustible liquids, and this tendency is called volatility. 5. The Flash Point of a liquid is the temperature, in degrees Fahrenheit, at which vapors form a flammable mixture in air. 6. The Fire Point of a liquid is the temperature at which the vapor ignites and burns steadily. Another important characteristic of flammable and combustible liquids is indicated by their Explosive Range or Flammable Limits. If a spark or source of ignition is present, vapors from flammable or combustible gases can form an explosive mixture when the concentrations of vapor in the air reaches a certain point or range. The limiting concentration of this explosive range is called the Lower Explosive Limit (LEL) and Upper Explosive Limit (UEL). These values are expressed as the percent of the vapor by volume in air. Below the LEL, the mixture is too lean to burn and above the UEL, the mixture is too rich to burn. The explosive ranges of various liquids can vary considerably and should be checked on the MSDS for that product.  Handling and Storage Rules  1. When considering where to store hazardous substances, factors such as fire/explosion risks, population density and proximity to other materials, must be taken into consideration. Other considerations should be bunding, ventilation, temperature and security. 2. High standards of housekeeping must be maintained in hazardous material storage areas and suitable hazard warning signs erected. 3. Oxidizing agents should never be stored near flammable materials, as the oxygen released will support any resulting fire. 4. Do not leave oily rags or paint splattered clothes around in piles. Put oil rags or paint-splattered rags or clothing in a metal can with a tight lid until they are ready to be hauled away, burned or washed. Such removal, burning or washing is to be done daily. Piles of oily or paint-splattered rags can generate enough heat to start burning by themselves. Tightly closed containers minimize the amount of air to get to them, thus reducing the chances for combustion. 5. When gasoline is exposed to the air, it gives off far greater amounts of explosive fumes than any other fluid and must be handled carefully and with caution. Store in tightly covered cans. DO NOT PUT GASOLINE IN BREAKABLE CONTAINERS. Cans for carrying and pouring gasoline are to have air-tight lids, flexible spouts, and be marked with the word, "GASOLINE". 6. Do not refuel a gasoline engine that is running if its fuel tank is on or adjoining the engine. Where feasible, wait at least 15 minutes to refuel such an engine after it is turned off. Gasoline vapors can be ignited by a hot engine. Do not start an engine on which gasoline has been spilled during tank refill, until the spillage has been cleaned off. 7. Where it is available and can be provided, use engine starting fluid instead of gasoline for priming the carburetor of hard-starting engines, especially in cold weather. 8. Do not use gasoline as paint thinner or for cleaning purposes. 9. Oxygen is an easily ignited and explosive gas. A mixture of oxygen and oil explodes under pressure. Do not use oxygen as a substitute for compressed air, such as in paint sprayers, in mud-filter loss tests, or in engine air starters. Never use oxygen or compressed air as a substitute for compressed nitrogen. 10. Always store oxygen cylinders at least 20 feet (6m) away from cylinders containing flammable gases or other flammable or combustible products. If oxygen and flammable gas cylinders must be stored in close proximity, the cylinders should be separated by a fire resistant partition at least five feet (1.6m) high, having a fire resistance of at least one half hour. Partitions of 1/4 inch (6 mm) steel plate satisfy this requirement 11. Store any flammable liquid far away from sources of ignition. This includes gasoline, diesel fuel, lubricating oil, solvents, kerosene, crude oil, distillates, paint, thinners, and liquefied petroleum gas. Sources of ignition include welding operations, trash burning, engine exhaust, and electric motors, generators, and switches. Consider direction of prevailing winds in positioning flammable liquid storage tanks. Never build a fire under a fuel storage tank to increase the pressure from it. Tank must have spring-loaded relief valve, and excess flow valve. Protect piping from mechanical injury. 12. Paint, or other flammable liquid, storage lockers should have adequate ventilation with a means to close the vents in case of fire. Covered rag containers should be stored in this locker. A fire extinguisher of Class B-II rating should be mounted outside the door to all paint lockers [2 1/2 gallon (10l) foam, 15 lb. (6.8 kg) CO2 or 10 lb. (4.5 kg) ABC Dry Chemical]. 13. Warning signs should be posted on paint locker doors as follows:   **"FLAMMABLES - NO SMOKING"**  **"KEEP DOOR CLOSED"**   1. If a fixed fire extinguishing system is used, instructions for activation of that fixed system should be conspicuously posted and the system inspected and serviced annually. If equipped with a fixed fire extinguishing system, the protected space must have a pressure release mechanism. 2. Gas heating stoves are to be connected to the fuel source with either metal pipe or armor-coated hose of at least 150-psi (1034 kPa) pressure rating. If hose is used, it is to have factory-installed connections on both ends. Before lighting a stove be sure the gas is off and has been off three or four minutes; use a long roll of paper to light it, instead of putting your hand inside the enclosure with a match; keep your face away from the opening through which the stove is being lit. 3. Smoking regulations for the given rig are to be posted on the bulletin board. This sign is to specify areas where smoking is permitted. In a gaseous area all matches and smoking materials are to be left outside that area. 4. Material Safety Data Sheets (MSDS) or appropriate host country hazard information sheets should be obtained for any chemical used on the rig. The sheets are available from the chemical supplier. The sheets shall be kept in the ECDC MSDS booklet on the rig. 5. Avoid breathing dust, vapors, or fumes. Stay upwind or wear appropriate equipment. 6. Containers of flammable products shall be kept sealed and shall be properly marked. Empty containers shall be disposed of in a manner that will not create a hazard. Do not pressurize, cut, weld, or expose empty containers to flame unless they have been thoroughly cleaned by a method approved by the supplier. 7. The MSDS sheet or equivalent approved by host country shall be consulted for appropriate first aid procedures for emergency treatment of chemical injuries. 8. Personnel shall not attempt to siphon any fluids by mouth. 9. Employees involved in handling flammable liquids and chemicals should know where eyewash stations and showers are located and how they are to be used. 10. Proper respirators will be worn when paint spray guns are used. In confined areas, exhaust fans will be used to remove paint fumes. 11. When painting, always consult the Material Safety Data Sheets (or equivalent host country hazard information sheet) for the product, especially when using urethanes and epoxy compounds, and adhere to the manufacturer's recommendations for application and safety. 12. Flammable liquid containers shall be confined to a specific place on the rig. Paints and solvents shall be stored in the paint locker; drums should be maintained in the drum storage area. 13. The storage areas shall be well ventilated to prevent build-up of combustible vapors. 14. Drum bungs shall be installed. Rusted or corroded containers shall be disposed of to prevent spillage. Areas of container storage shall be inspected for spillage on a regular basis. 15. All ignition sources shall be controlled in the storage area. Hot surface temperatures shall be removed or guarded (i.e., exhaust pipe). Electrical equipment shall be properly installed. Welding and burning activities shall not be conducted in or near storage areas. Cigarette smoking or open flames shall not be allowed in the storage area.  Safe Materials Certain materials such as foodstuffs, non-flammable materials such as piping and steel plate, may be regarded as safe, in so far as they do not constitute a fire or toxic hazard. They are still capable of causing injury to personnel if they are not handled correctly. Segregation of Materials Products bearing the same hazard symbols should be stored together but segregated from each other. The means of segregation can be achieved in many ways, e.g. distance, by being interspersed by other materials of low hazard, by inert materials or by a true physical barrier. The nature and amount of segregation being dependent upon the nature of the hazard it is intended to minimize. Mixing Of Materials  1. Chemicals should only be mixed after all the manufacturers instructions have been taken into consideration. 2. Separate facilities with suitable bunding and a safety shower should be utilized for mixing and handling hazardous substances. 3. Any spills should be dealt with immediately and may require specialist advice on ways to dispose of contaminated substances.  Stacking Of Materials Before any materials are stacked, a proper plan of the means of stacking shall be made out to eliminate any hazards and congestion. Factors to be considered are:   1. Permissible floor loading capacity within buildings. 2. The routing of materials in and out. 3. The provision of suitable access ways, bearing in mind what mechanically propelled transport will be used, and other handling equipment. 4. The lighting of the area, so that dark shadows are avoided in working areas. 5. Factors affecting the size of stacks, will be the space available and the size, bulk, weight, rigidity or fragility of the material.        A sound base on which to build, a stable construction is dependent upon the following:  1. Safe relation of height to the dimension of the base. 2. Sound interlocking of the material to be stacked. The interlocking can be natural in using the material being stacked or artificial in the use of other materials, e.g. wooden planks, rails, posts. 3. The aggregate weight of the stacks to be borne by the material in the lowest tier of the stack. 4. Stability disturbing factors, e.g. vibration, collision by transport, deterioration of the stacked materials or their containers.  Stacks must not be built:  1. Within eighteen inches of a wall. 2. Within three inches of the edge of a concrete raft. 3. Adjoining roads, but if this is not reasonably practicable, they should have a minimum clearance of four foot six inches, between the edge of the stack and road. 4. Materials as stacked must remain stable until they are required again. This applies to whether materials are self-supporting, or contained in bins, shelving or open racking. Where racking or pigeon holing is used to manually store materials, the heavier items must be stored at the lowest level.  In shops and yards where mechanically propelled handling equipment is used, e.g. fork lifts, etc. in areas where there are racks, it is strongly recommended that the racking is:  1. Bolted to the floor. 2. Protected at the corners by strong guard rails to prevent damage to the racks in the event of a collision. 3. All racking will be marked with its safe load capacity as determined by the manufacturer or the company that installed the racking. If there is to be a change in the load requirement the manufacturer/installing company should be consulted. 4. Racking should be inspected at periodic intervals by the installing company or by an independent competent person.  De-Stacking Of Material The majority of accidents involving collapse of stacked materials occur during the process of de-stacking. The general rules for de-stacking are as follows:   1. Only one person should be responsible for the manner in which the stack is reduced. This is important where gangs are employed. 2. If the person in charge of the de-stacking had no part in the erection of the stack, he should acquaint himself with its construction. 3. The stack should be taken down tier by tier so that no part is endangered. 4. If tubulars or other fencing has been built in or around the stack, this should be dismantled and adjusted as the height is decreased. 5. Spillage should be collected as it is released and removed to a safe position away from the stack.  Pallets Pallets used for storing and transporting are subjected to considerable wear and tear, especially those on a common user basis. Prior to use all pallets must be inspected to ensure that they are in a safe condition. Pallets are not to be used for walkways or stair landings due to the tripping hazard they present. Housekeeping A high standard of housekeeping is of the utmost importance within stores buildings/yards to prevent accidents and fire occurring.  Suitable receptacles shall be provided for all waste materials.  Separate receptacles should be provided for:   1. Combustible materials, e.g. woodwool, shavings, plastic pellets and other packaging materials. 2. Scrap metal. 3. Highly flammable wastes, e.g. paint/thinners/solvents and materials contaminated by the same. 4. Solid and liquid wastes.   All floors, passageways, gangways, steps, etc, shall be maintained in good condition, and be free of any obstructions or substances likely to cause a person to slip, trip or fall.  Banding wire/strapping etc, must not be left lying around, but disposed of safely so that it will not cause further hazard to others.  Scrapwood should either have all nails removed or beaten flat. Scrap wood which is no longer required shall be disposed of in a safe manner.  Spillages should be cleaned up immediately, and, if the area remains wet/slippery, it should be covered with sand or other absorbent material and/or barriers and warning signs to prevent any further hazard. |  |