1.0 OBJECTIVE:

To provide procedure for Handling and Storage of Ethanol and Hand Sanitizer.

2.0 SCOPE:

This procedure is applicable for all CKPL Manufacturing locations, transportation, Depots, Distributors and Wholesalers

3.0 RESPONSIBILITY:

Workmen and Staff is responsible to follow procedure as per this SOP

Operations – To provide all necessary fire safety equipments and fire safety facility.

HR, QA In charge & Factory Manager – Implementation and compliance of this procedure at Manufacturing Units.

Operations team, Sales Team - Implementation and compliance of this procedure at depots, distributors place and wholesalers place.

4.0 ACCOUNTABILITY:

4.1 Factory Managers and GM- Operations

5.0 PROCEDURE:

5.1 Storage and Handling Instructions for Ethanol and Hand Sanitizer at Manufacturing Units:

5.1.1 Do not store other types of chemicals beside bulk storage vessels / ethanol storage tanks or in storage rooms.

5.1.2 Bulk storage vessels / ethanol storage tanks should be located away from potential ignition sources such as heat, sparks or open flames.

5.1.3 Do not store compressed gases beside Bulk storage vessels / ethanol storage tanks.

5.1.4 Bulk storage vessels and ethanol storage area should be equipped with spill protection.

5.1.5 Bulk storage vessels and ethanol storage area should have appropriate signage or display boards for fir safety equipments /emergency exits.

5.1.6 Smoking should never be allowed near Bulk storage vessels and ethanol storage area.

5.1.7 Drums or large containers of ethanol should never be stored beside exits or in a way that blocks access.

5.1.8 Make sure that Bulk storage vessels and ethanol storage area have properly designed ventilation systems that are regularly maintained.

5.1.9 Pure ethanol has a flashpoint of 55 F (13 C). It releases vapors into the atmosphere, creating a flammable environment. Temperature controlled chemical storage buildings / area will prevent excess evaporation.

5.1.10 Ethanol storage must comply with fire regulations regarding the type of cabinet and store, respectively.

5.1.11 National safety guidelines and local legal requirements must be adhered to for the storage of Ethanol.

5.1.12 Electric panels, MCC, switch boards should not be near to the Bulk storage vessels and ethanol storage area.

5.1.13 Usage of steam, generation of steam to be avoided during handling & storage of ethanol / hand sanitizers.

5.1.14 No necked electric wires, joints should be available at entire manufacturing and packing section.

5.1.15 Leak test for finished product to be performed as per procedure provided by PD team to ensure there is no leakage in supply chain.

5.2 Fire hazard and its Prevention

5.2.1 To prevent fires, flammable materials must be properly managed in the workplace. There are three main ways to prevent fires: **(Refer Point No. 5.7 for note on Fire)**

5.2.2 Limit the amounts of flammable and combustible materials

5.2.2.1 Keep only what you need on-site

5.2.2.2 Store flammable materials in the smallest volumes or provide adequate fire proof facility, as necessary

5.2.2.3 At work locations, keep only those chemicals that are needed for the present task

5.2.2.4 Do not let hazardous wastes accumulate at the work site

5.2.2.5 Store products, including wastes, used at the work site in proper containers

5.2.2.6 Keep flammable materials separate from other processes and storage areas

5.2.3 Provide proper ventilation to ensure flammable vapors do not accumulate

5.2.3.1 Install properly designed ventilation in storage area

5.2.3.2 Ensure that processes that use or make flammable materials do not exhaust back in the work site

5.2.3.3 Ensure that equipment, such as spray booths, where flammable materials are used, are exhausted outside of the building, and away from air intakes

5.2.3.4 Ventilation systems must be properly maintained and comply with the Alberta Building Code

5.2.4 Control ignition sources

5.2.4.1 Ground and bond all work and ignition-proof equipment

5.2.4.2 Ensure that there is no smoking in work areas where flammable materials are stored or used

5.2.4.3 Never store flammable materials near hot equipment or open flames

5.2.4.4 Use intrinsically safe and non-sparking tools

5.2.4.5 Use special care to avoid static electric charges **(Refer Point No. 5.6 for note on Static Energy)**

5.2.4.5 It is important that the Factory Manager along with safety officer should visit the work site and identify potential fire hazards. This will allow identifying the best ways to control these hazards.

5.2.4.6 Sufficient amount of fire extinguisher should be made available. Use a CO2, halon, or dry chemical extinguisher that is marked B, C, BC, or ABC. An alcohol-type or alcohol-resistant (ARF) foam may be used to effectively combat fuel ethanol fires.

5.2.4.7 Water should not be used to extinguish fire.

5.3 Instructions Depot / C&FA / Warehouses

5.3.1 Entry and exit to the storage areas shall have approvals from Depot/warehouse in-charge, self-closing doors, emergency exit doors to be available.

5.3.2 The room shall be liquid-tight (leak proof) where the walls join the floor.

5.3.3 At least three feet wide corridor shall be maintained inside Depot/warehouse to avoid possible damage to the products and moving personnel.

5.3.4 Easy movement within the room is necessary in order to reduce the spilling or damaging the containers and to provide both access for fire fighting and a ready escape path for occupants of the room should an emergency occur.

5.3.5 No container / CFC should be kept inverted. At all time container / CFC should be kept upright.

5.3.6 Storage area should comply with fire regulations regarding the type of cabinet, pallets, wall and floor, respectively.

5.3.7 Storage facilities should ideally be air-conditioned or cool rooms. As specified in product label, product should be stored below 250 C.

5.3.8 No naked flames or smoking should be permitted inside depot / warehouse premises.

5.3.9 National safety guidelines and local legal requirements on fire safety shall comply for the storage of hand sanitizer.

5.3.10 Damaged Containers/dispensers should be stored in a cool place and care should be taken regarding the securing of tops/lids.

5.3.11 A designated storage area to be provided if it is necessary to store more than 250 litres of sanitizers.

5.3.12 Containers containing hand sanitizers should be stored away from sources of ignition. Eg. Electric switches, lights.

5.3.13 All spills of sanitizer should be cleaned up promptly. With major spills, remove any ignition sources, ventilate the area, and provide respirators if needed.

5.3.14 Sufficient amount of fire extinguisher should be made available.
Note: Use a CO2, halon, or dry chemical extinguisher that is marked B, C, BC, or ABC. An alcohol-type or alcohol-resistant (ARF) foam may be used to effectively combat fuel ethanol fires.

5.3.15 Water should not be used to extinguish solvent based fire.

5.4 Instructions for Distributors / Wholesalers / Retailers

5.4.1 Do not display Hand Sanitizers near to open fire, direct sun light and smoking area.
Note: For display at outside shop dummy/empty containers/sachets shall be used.

5.4.2 Stacking should be properly done to avoid fall / damage norms to avoid leakage or damage.

5.4.3 Store Hand Sanitizers separate from other products at storage areas. Store near well ventilated area.

5.4.4 At storage area, at least three feet wide corridors to be maintained, to avoid leakage or damage while personnel moving or transferring of products.

5.4.5 No container / CFC should be kept inverted. At all time container / CFC should be kept upright.

5.4.6 Product storage should be as storage condition specified in product label.

5.4.7 No naked flames or smoking should be permitted in Hand Sanitizers storage areas.

5.4.8 Sufficient amount of fire extinguisher should be made available.

Note: Use a CO2, halon, or dry chemical extinguisher that is marked B, C, BC, or ABC. An alcohol-type or alcohol-resistant (ARF) foam may be used to effectively combat fuel ethanol fires.

5.4.9 Water should not be used to extinguish solvent based fire.

5.5 Instruction for Transportation of Sanitizers

5.5.1 No container / CFC should be kept inverted. At all time container / CFC should be kept upright.

5.5.2 No naked flames or smoking permitted near to the vehicle during loading, unloading & transportation of Hand Sanitizers.

5.5.3 Vehicle should not carry any objectionable materials such as Strong acids, bases, reactive chemicals, petroleum products along with Hand Sanitizers.

5.5.4 There should not be holes / damages on the storage flat-form. If any container of hand sanitizer got leaked during transit, it should not leak into the vehicle engine parts.

5.5.5 Stacking of CFC's to be done as per staking norms mentioned on the CFC.

5.5.6 Do not mix hand sanitizers along with other products. Load hand sanitizers at the end.

5.5.7 If transportation time requires more than 24 hours, then product should ideally to be transported through air-conditioned vehicle. As specified in product label, product should be stored below 250 C.

5.5.8 Container door to be properly closed and ensure that fall protections are provided inside container for stacked CFC's.

5.5.9 During transportation if vehicle driver/cleaner sense (by smell of hand sanitizer) that there is leakage of container, immediately stop the vehicle and inform the logistic team / Factory Team.

5.5.10 Vehicle shall contain fire extinguisher.

Note: Use a CO2, halon, or dry chemical extinguisher that is marked B, C, BC, or ABC. An alcohol-type or alcohol-resistant (ARF) foam may be used to effectively combat fuel ethanol fires.

5.5.11 Water should not be used to extinguish solvent based fire.

5.6 Note on Static Electricity

5.6.1 Static electricity is an electric charge that cannot move. It is created when two objects or materials that are in contact with each other are separated. While the objects are in contact, the surface electricity charges try to balance each other. When the objects are separated, they are left with either an excess or shortage of electrons, causing them both to become electrically charged. If these charges do not have a path to the ground, they are unable to move and becomes "static". If static electricity is not quickly removed, the charge will build up. Eventually, it will develop enough energy to jump as a spark to some nearby less highly charged object. In an explosive or flammable atmosphere, the spark can set off an explosion or fire. The danger is greatest when flammable liquids are being poured or transferred.

5.6.2 Static electricity can be produced by:

- non-polar liquid flowing through a pipe or hose (e.g. hydrocarbons)
- spraying
- blending or mixing
- filling containers or tanks
- movement (and friction) between materials
- movement of dry powdered material through chutes or conveyors
- movement of non-conductive conveyor belts or drive belts
- appliances that are plugged into electrical outlets
- flipping a light switch on or off.

5.6.3 Static electricity can be controlled by:

- bonding and grounding
- humidification
- static collectors
- additives

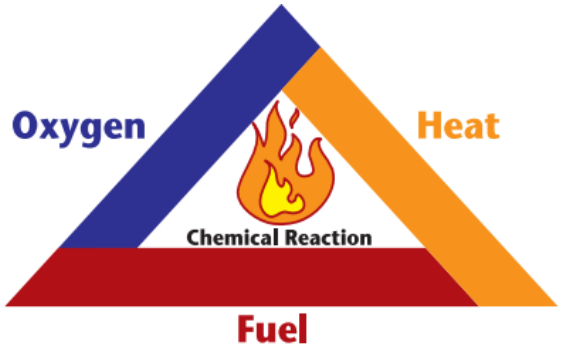
5.7 Note on Fire

5.7.1 How do fires occur: For a fire to occur there are three elements that must come together at the same time and in the right proportions, fuel, heat (ignition source) and

oxygen. Remove any of the elements and the fire will go out. The "fire triangle" is commonly used as a model to understand how a fire starts and how it can be prevented.

5.7.2 **Fuel —** Fuels are flammable or combustible materials and can be gases, liquids or solids.

5.7.3 **Heat —** These are ignition sources and include an open flame, lit cigarette and sparks (such as from electrical current and static electricity shorts). A chemical reaction that creates heat can also ignite a fuel and oxygen mixture.



5.7.4 **Oxygen —** The most common source of oxygen is air, but oxygen can also come from chemicals called oxidizers. Examples of common oxidizers are some types of acids and chemicals such as chlorine, chlorine dioxide, potassium permanganate and potassium chlorate.

5.7.5 **The spread or propagation of fire is also dependant on a fourth factor, the chemical chain reactions that occur after the fire is started**.

Fire prevention consists of making sure that the three legs of the fire triangle never meet. It is important to note that a fire will not always start even when the legs of the triangle meet unless all three elements are present in right amounts. For example, vapours from a flammable liquid must be mixed with a certain amount of air and exposed to the right amount of heat to ignite and burn.

Once vapours from a flammable liquid have ignited, the flames may "flash-back". This means the flames travel back, through the vapourair mixture, to the container or source of the flammable liquid. This can create an explosion. Most flammable liquids produce vapours that are heavier than air. Some flammable gases are also heavier than air. These

gases and vapors can spread a considerable distance along the ground or floor and be ignited by a distant spark or flame or source of heat.

HISTORY OF CHANGES

Revision No.	Date	Reason for change
00	21.04.2020	New Document