

College of Engineering Safety & Environmental Hazard Risk Assessment

Date: August 18, 2015
Department: College of Engineering
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Risk Assessment Facilitator: Juanita Miller
Subject/Title: Kettle Corn Manufacture
Building/Room: Various Remove Locations

Background Summary:

Corn kernels, corn oil and sugar are mixed in a stainless steel kettle and heated over an open propane flame. The propane cylinder, kettle, sifting/cooling table, hand wash station and serving table are setup under a tent. The kettle is located at least 1 foot from the tent wall to reduce the likelihood of fire. A fire extinguisher is available and located within 6 feet of the kettle. A serving table and rope are used to control unauthorized access to the cooking area. The serving table has a cloth that extends down in front and sides of the table to provide a semi-secure area for supplies, additional propane cylinder and personal items. A binder with SDS information is stored with the supplies. A first aid kit is available under the serving table with additional supplies for possible burns.

What If Scenarios:

1. What if the propane cylinder runs empty? The burner is extinguished and no gas is flowing since the cylinder is empty with no safety consequence.
2. What if the burner flames out? The gas is still flowing to the burner which could result a fire or explosion with an ignitions source. This could cause burn or projectile injury.
3. What if the tent blows over? Tent poles and cloth could strike someone causing injury. Also the cloth could catch fire causing burn injury.
4. What if wind catches the serving table cloth and blows it onto the kettle/burner? The cloth could catch fire causing burn injury.
5. What if popcorn kernels are ejected from the kettle? The kernels could act as projectiles and result in stuck by or burn injury.

6. What if liquid propane is released from the cylinder? The propane in the cylinder is a cryogenic fluid which could cause a burn injury. Also the propane would evaporate, and in the presence of an ignition source, create a fire and cause stuck by or burn injury.

Recommendations:

1. Prepare a Standard Operating Procedure (SOP) for the operation of the burner and kettle to ensure it is monitored for steady flame condition. The SOP needs to also include instructions to maintain the kettle closed when processing of product occurs.
2. The kettle needs to be kept a sufficient distance from non-essential personnel so that if kernels are ejected they will not have force adequate to injure.
3. The tent needs to be anchored to the ground with adequate force to ensure it does not blow over in normal weather conditions.
4. Any table coverings need to be secured to prevent them from blowing and creating a fire or stuck by hazard. Also, the fire extinguisher needs to be kept nearby, and personnel need to be trained in its use.
5. Provide an SOP for proper handling and use of liquid propane cylinders. And personnel need to be instructed to keep the cylinder valves closed when not connected to the burner feed.

Findings:

This project is acceptable to proceed with these recommendations and adult supervision.