

More lessons from fire while filling containers

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As promised in the January 2009 Beacon, we will discuss another lesson from the incident reviewed in both the December 2008 and January 2009 issues of the Beacon. A fire started in a packaging area while a 300-gallon portable steel tank (a "tote") was being filled with ethyl acetate. In previous Beacons, we discussed static electricity as an ignition source, the importance of bonding and grounding, and the use of dip pipes or bottom loading for filling containers with flammable liquids. In this issue we will discuss another important lesson from the same incident.

The consequence of this incident became much more severe because the initial fire spread to an adjacent flammable material storage warehouse. The wall separating the two areas was not fire-rated. Large non-fire-rated doors between the warehouse and packaging area were kept open, and were not equipped with self-closing mechanisms. Also there was no fire protection system (sprinklers or other fire suppression system) in the flammable material packaging area.

Spill containment is important whenever you are filling containers with any material, whether flammable or not. For flammable materials, containment helps to limit the area potentially impacted by a fire. And, for all materials containment keeps spills from getting into drains, sewers, surface water drainage, or onto uncontaminated soil. While improper spill containment was not identified as a factor in this particular incident, the incident is a reminder of why containment is important.



What can you do?

- Conduct flammable material container filling operations in areas which have been properly designed for this service. This would include, for example:
 - Adequate fire protection facilities
 - Separation of equipment, fire walls and fire rated doors
 - Spill containment.
 - Proper electrical classification of all equipment
- Be sure that there is proper spill containment around any containers which you are filling. The spill containment must be liquid tight, made of a material appropriate to contain the liquid being handled, and of sufficient size to contain a spill which could occur.
- Conduct a management of change review for any unusual operations which involve filling of containers in areas not originally designed for that purpose, and be sure to consider ignition source control, fire protection, and spill containment in this review.

A Review

We have done three Beacons (December 2008, January 2009, and this issue) on a single incident which occurred while filling containers with a flammable liquid. When filling containers or other vessels with flammable liquids, you should strongly consider these safe design features:

- bottom filling
- grounded/bonded equipment
- spill containment
- inert gas in vapor space (nitrogen or carbon dioxide, for example)
- liquid inlet velocity controlled until dip pipe covered
- some type of emergency shutoff
- sprinkler system, or other fire protection system
- other features as required by codes and standards for safe handling of flammable liquids

Fill flammable liquid containers in properly designed areas!