Fire Protection Research Foundation, National Fire Protection Association, insurance industry, others launch campaign to curb dangerous IBC fire risk

April 2, 2014 – The Fire Protection Research Foundation and National Fire Protection Association (NFPA), with support from the insurance industry and coordination from other relevant groups, today launched the Contain the IBC Fire Risk campaign, an educational effort to reduce a serious yet frequently unknown risk for dangerous pool fires associated with intermediate bulk containers (IBCs).

This public education campaign intends to correct improper storage of combustible and flammable liquids in IBCs by encouraging compliance with NFPA 30, Flammable and Combustible Liquids published by the National Fire Protection Association. This code governs storage, handling and use of flammable and combustible liquids.

IBCs are containers made of metal, plastic or a composite of materials often used for shipping and storing combustible and flammable liquids for agricultural, chemical, food or other production purposes. Although U.S. Department of Transportation and United Nations regulations permit shipping these liquids in IBCs, their rules do not apply to storing them and don’t require any fire testing of the containers.

Storage of composite IBCs containing combustible and flammable liquids can be particularly concerning. When these containers fail, they release a large pool of fluid that, when ignited, rapidly releases so much heat that the fire sprinkler systems may become overtaxed. This system failure can occur faster than firefighters can respond to a fire call. The composite IBCs can be easily breached by even small fires and then ignite themselves, further contributing to the problem.

Pool fires are extremely difficult to contain and as a result can be catastrophic events capable of rapidly destroying the entire building where the event occurs and also threatening adjacent buildings.

“Where improperly stored, IBCs containing combustible and flammable liquids potentially create an unrecognized hazard for dangerous pool fires,” said Christian Dubay, vice president and chief engineer, NFPA. “Proper storage in compliance with NFPA 30 ensures that these potential hazards are properly addressed.”

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Despite this risk, those responsible for storage of commodities are often unaware of dangers posed by IBCs containing combustible or flammable liquids — or how to reduce the risk. Many falsely assume containers approved for shipping are also approved for storage.

“Awareness leads to increased compliance with NFPA 30, a critical step in the prevention of pool fires,” said Mike Snyder, director of safety & loss prevention for Dow Corning, one of the companies participating in the public awareness effort. “That’s why the Contain IBC Fire Risk awareness campaign is such an important initiative.”

Fire safety experts and insurance industry representatives working together to reduce this risk want impacted groups to know the following about NFPA 30:

- Only liquids with a closed cup flashpoint of 38 degrees C (100 degrees F) or greater are permitted to be stored in metal, rigid plastic and composite IBCs. However, rigid plastic and composite IBCs must be listed and labeled.
- Unlisted composite IBCs are not permitted for storage of combustible or flammable liquids because they haven’t been inspected or certified to provide any fire endurance and have been shown to fail quickly in fires. Listed composite IBCs, in contrast, have been designed, built and certified to last in fires at least 20 minutes.
- Generally, flammable liquids (flash point below 38 degrees C or 100 degrees F) should never be placed in plastic or composite IBCs of any type, listed or unlisted.
- Combustible liquids should never be placed in unlisted composite IBCs.

In addition to educating impacted audiences nationwide about NFPA 30, the Contain the IBC Fire Risk campaign encourages these groups to make a commitment to safe storage by checking their facilities for NFPA 30 compliance and correcting composite IBC pool fire hazards. Visit www.nfpa.org/ibc to view specific steps for NFPA 30 compliance and learn more about this effort. To learn more about NFPA 30, visit www.nfpa.org/30.

About the Fire Protection Research Foundation
The Fire Protection Research Foundation plans, manages, and communicates consortium-funded research on a broad range of fire safety issues in collaboration with scientists and laboratories around the world. The Foundation is an affiliate of NFPA.

About the National Fire Protection Association (NFPA)
NFPA is a worldwide leader in fire, electrical, building, and life safety. The mission of the international nonprofit organization founded in 1896 is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education. NFPA develops more than 300 codes and standards to minimize the possibility and effects of fire and other hazards. All NFPA codes and standards can be viewed at no cost at www.nfpa.org/freeaccess.
INTERMEDIATE BULK CONTAINERS

Intermediate bulk containers are closed shipping vessels with a liquid capacity from 450 up to 3,000 L (119 to 793 gallons). They are intended for storing and transporting liquids defined in the Code of Federal Regulations and the United Nations’ Recommendations on the Transport of Dangerous Goods, which include combustible and flammable liquids.* These rules, however, do not require any fire testing of IBCs.

IBCs can be constructed of metal, plastic or a composite of materials. Composite IBCs are commonly a combination of blow-molded plastic containers in a metal cage or a plastic bag in a corrugated box.

PLASTIC (NONMETALLIC) IBCS INCREASE FIRE RISK

When composite IBCs containing combustible or flammable liquids are stored together in warehouses or other facilities, they can cause dangerous pool fires. These fire hazards have two components:

1. Release of combustible and flammable liquids.
   When IBCs containing flammable or combustible liquids fail, they can release a large pool of these liquids. If ignited, the extreme heat release rates can outtax most fire sprinkler systems. This hazard exists regardless of how the IBC is constructed.

2. Composite IBCs can be easily breached and then the IBC itself contributes to the fire hazard.
   Composite IBCs can be easily breached by exposure to even a small fire. Additionally, once the unit is emptied, the composite may ignite and contribute to the liquid pool. Pool fires caused by composite IBCs can be catastrophic events and are capable of destroying the building where the event occurs. A spreading pool fire can also threaten adjacent buildings.

NFPA 30 RULES REDUCE THE RISK

NFPA 30 – the Flammable and Combustible Liquids Code published by the National Fire Protection Association – provides safeguards to reduce the hazards associated with the storage, handling and use of flammable and combustible liquids. The code is enforceable under building and fire prevention codes in the following states: Ala., Ariz., Ark., Calif., Colo., Conn., Fla., Hawaii, Iowa, Ill., Ind., Kan., Ky., Mass., Maine, Mich., Minn., Mo., Mont., N.D., Neb., N.J., N.M., Nev., Ohio, Ore., R.I., Texas, Utah, Va., Vt. and Wis. It is also enforceable in several local jurisdictions. Other avenues of enforcement may include Occupational Safety and Health Administration (OSHA) regulations.

NFPA 30 only permits three types of IBCs in an industrial building. Metal, rigid plastic and composite. Only liquids with a closed cup flash point of 38 C (100 degrees F) or greater are permitted to be stored in these containers. However, the composite IBCs must be listed and labeled. The complete rules on what types of IBCs are allowed in buildings can be found in chapter 9 of NFPA 30 (visit www.nfpa.org/30 to access the chapters for free).

Unlisted composite IBCs have not been inspected or certified to provide any fire endurance and have been shown to fail quickly in a fire. Listed composite IBCs, however, have been designed, built and certified to last in a fire for at least 20 minutes, and can be used for storing liquids with a closed cup flash point of 38 C (100 degrees F) or greater.

Of the dozens of composite IBCs on the market, there is currently only a very small fraction of listed and labeled composite IBCs in use. The vast majority of composite IBCs that are used to store combustible or flammable liquids are creating a significant hazard.

MISUNDERSTOOD RULES CREATE LIMITED COMPLIANCE

U.S. Department of Transportation (DOT) and United Nations regulations permit the shipping of combustible liquids and some flammable liquids in many types of IBCs. However, transportation regulations do not require IBCs to be fire tested and DOT has no jurisdiction over commodities in storage. Yet, many producers and customers alike believe that a shipping container approved by DOT is also approved for storage in a warehouse. This is not the case. NFPA 30 rules limit the types of IBCs allowed in buildings and also set limits on the liquid types permitted in them.

Additionally, warehouse or facility personnel responsible for accepting or storing goods are often unaware of the serious fire hazard created by composite IBCs containing combustible and flammable liquids. As a result, improper storage and potentially dangerous conditions often go unrecognized.

FOUR STEPS TO RECOGNIZE THE RISK AND COMPLY WITH NFPA 30

One: Determine whether the IBC is in or will eventually enter a protected facility.
A protected facility is defined in NFPA 30. Requirements include, but are not limited to, increased levels of sprinklers or other protections, depending on the hazards to be protected against.

Two: Identify the liquids to be stored.
Determine if liquids stored or being received are NFPA 30 Class I (flammable – flash point 100 F), NFPA 30 Class II (combustible – flash point 100 F up to 140 F) or Class III (combustible – flash point 140 F and higher).

Three: Identify the IBC material.
Identify if the IBC is metal, plastic or composite, and if the latter, if it is listed and labeled.

Four: Determine if the IBC material is appropriate for storage of its contents in the protected facility.
Determine if any of the Class I liquids are stored or being received in composite IBCs. If so, switch to metal IBCs. Determine if any of the Class II or Class III liquids are stored or being received in unlisted IBCs. If so, you can comply with NFPA 30 by switching to listed composite or metal IBCs.

REDUCE THE RISK BY MAKING A COMMITMENT TO SAFE STORAGE

The Fire Protection Research Foundation with funding from the Property Insurance Research Group in coordination with NFPA and the insurance industry are working together on an awareness campaign to help reduce the risk created by improper storage of IBCs containing combustible or flammable liquids. This effort includes the following activities:

• Educate impacted groups – container manufacturers, chemical manufacturers, code and fire officials, warehouse owners, managers and staff, insurance representatives, procurement and supply chain specialists, risk managers and fire fighters – on what they can do to ensure safe storage.

• Encourage those responsible for storage of combustible and flammable liquids to:
  1. Check their facilities, operations and procedures for NFPA 30 compliance.
  2. Correct any composite IBC hazards.

Everyone can help reduce this risk by following steps at www.nfpa.org/ibc to make a commitment to safe storage. Here you can learn more about the issue and find tailored information for container manufacturers, chemical manufacturers, code and fire officials, warehouse owners, managers and staff, insurance representatives, procurement and supply chain specialists, risk managers and fire fighters.
WHAT IS NFPA 30?

NFPA 30 is the Flammable and Combustible Liquids Code published by the National Fire Protection Association. The code provides safeguards to reduce the hazards associated with the storage, handling and use of flammable and combustible liquids. NFPA 30 is the law in most states.

WHERE IS NFPA 30 THE LAW?

NFPA 30 is enforceable under building and fire prevention codes in the following states: Ala., Ariz., Ark., Calif., Colo., Conn., Fla., Hawaii, Iowa, Ill., Ind., Kan., Ky., Mass., Maine, Mich., Minn., Mo., Mont., N.D., Neb., N.J., N.M., Nev., Ohio, Ore., R.I., Texas, Utah, Va., Vt. and Wis. It is also enforceable in several local jurisdictions. Other avenues of enforcement may include Occupational Safety and Health Administration (OSHA) regulations.

WHAT IS AN INTERMEDIATE BULK CONTAINER (IBC)?

Intermediate bulk containers are closed shipping vessels with a liquid capacity from 450 up to 3,000 L (119 to 793 gallons). They are intended for storing and transporting liquids defined in the Code of Federal Regulations and the United Nations’ Recommendations on the Transport of Dangerous Goods, which include combustible and flammable liquids.* These rules, however, do not require any fire testing of IBCs.

WHAT TYPES OF IBCS ARE COMMONLY USED?

IBCs can be constructed of metal, plastic or a composite of materials. Composite IBCs are commonly a combination of blow-molded plastic containers in a metal cage or a plastic bag in a corrugated box.

WHAT TYPES OF IBCS ARE ALLOWED BY NFPA 30?

NFPA 30 only permits three types of IBCs in an industrial building. Metal, rigid plastic and composite. Only liquids with a closed cup flash point of 38 C (100 degrees F) or greater are permitted to be stored in these containers. However, the composite IBCs must be listed and labeled. The complete rules on what types of IBCs are allowed in buildings can be found in Chapter 9 of NFPA 30 (visit www.nfpa.org/30 to access the chapters for free).

WHAT IS THE FIRE HAZARD OF A COMPOSITE IBC?

When composite IBCs containing combustible or flammable liquids are stored together in warehouses or other facilities, they can cause dangerous pool fires. These fire hazards have two components:

1. **Release of combustible and flammable liquids.**
   When IBCs containing flammable or combustible liquids fail, they can release a large pool of these liquids. If ignited, the extreme heat release rates can overtax most fire sprinkler systems. This hazard exists regardless of how the IBC is constructed.

2. **Composite IBCs can be easily breached and then the IBC itself contributes to the fire hazard.**
   Composite IBCs can be easily breached by exposure to even a small fire. Additionally, once the unit is emptied, the composite may ignite and contribute to the liquid pool. Pool fires caused by composite IBCs can be catastrophic events and are capable of destroying the building where the event occurs. A spreading pool fire can also threaten adjacent buildings.

HOW BIG OF A PROBLEM IS THIS?

While there have only been a few fires that were caused or escalated by this hazard, those fires have led to the complete destruction of the buildings involved. It also

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must be recognized that this hazard might be found in any community with industrial, manufacturing or warehouse operations. Of the dozens of composite IBCs on the market, there is currently only a very small fraction of listed and labeled composite IBCs in use. The vast majority of composite IBCs that are used to store combustible or flammable liquids are creating a serious hazard.

**DOES NFPA 30 PROVIDE A “PROTECTED STORAGE” OPTION FOR COMPOSITE IBCS?**

Chapter 16 of NFPA 30 provides protection criteria for palletized and rack storage of composite IBCs. However, the IBCs must be listed and labeled.

**HOW CAN YOU IDENTIFY A LISTED AND LABELED COMPOSITE IBC?**

NFPA 30 recognizes IBCs that have successfully passed testing to standards listed in Chapter 2 as acceptable listed IBCs and requires all listed units to be clearly labeled by the listing agency to confirm they meet the criteria set in the standard.

**HOW ARE COMPOSITE IBCS NOT IN COMPLIANCE WITH NFPA 30 GETTING INTO PROTECTED FACILITIES?**

U.S. Department of Transportation (DOT) and United Nations regulations permit the shipping of combustible liquids and some flammable liquids in many types of IBCs. However, transportation regulations do not require IBCs to be fire tested and DOT has no jurisdiction over commodities in storage. Yet, many producers and customers alike believe that a shipping container approved by DOT is also approved for storage in a warehouse. This is not the case. NFPA 30 rules limit the types of IBCs allowed in buildings and also set limits on the liquid types permitted in them. Additionally, warehouse or facility personnel responsible for accepting or storing goods are often unaware of the serious fire hazard created by composite IBCs containing combustible and flammable liquids. As a result, improper storage and potentially dangerous conditions often go unrecognized.

**HOW AND WHY SHOULD WAREHOUSES COMPLY WITH NFPA 30?**

It is not only the law in most parts of the United States, but it also reduces the risk that catastrophic pool fires will destroy a building. Risk can be reduced by following the four steps of compliance:

- **One:** Determine whether the IBC is in or will eventually enter a protected facility.
- **Two:** Identify the liquids to be stored.
- **Three:** Identify the IBC material.
- **Four:** Determine if the IBC material is appropriate for storage of its contents in the protected facility.

**HOW MUCH SAFER IS A LISTED COMPOSITE IBC COMPARED TO ONE THAT IS UNLISTED?**

Listed Composite IBCs have been designed, built and certified to last in a fire for at least 20 minutes. Unlisted composite IBCs have not been inspected or certified to provide any fire endurance and have been shown to fail quickly in a fire.

**WHAT IS BEING DONE TO FIX THIS PROBLEM?**

There is currently an ongoing public education effort aimed at decreasing the pool fire risk posed by composite IBCs. Groups, and individuals who have the ability to help reduce this risk will be encouraged to take several steps in making a commitment to safe storage. Tailored information is available for container manufacturers, chemical manufacturers, code and fire officials, warehouse owners, managers and staff, insurance representatives, procurement and supply chain specialists, risk managers and firefighters. Generally these steps include: education, identification and correction.