BUREAU OF DANGEROUS GOODS

Summer is Sizzling but HazMat Should Not!

Summer will officially begin on June 21st, although it feels like it already has - and on this note it is worth discussing how summer weather conditions can affect hazardous materials/dangerous goods. High heat and humidity can have a negative impact on the behavior of chemicals and containers being offered for transportation.

It is a known fact that the manufacturing and distribution of products defined as hazmat increases as summer arrives. Products for personal care and/or household goods as well as industrial chemicals are being transported daily by ground, air and sea. So why is this time of year any different from any other?

Almost all chemicals are affected by temperature. The potential for chemicals to react and undergo changes increases as the temperature of the material rises. In addition, materials with greater volatility may produce higher levels of dangerous vapors at elevated temperatures. When dealing with liquids, those with high vapor pressure and low boiling points should be of particular concern.

When shippers prepare packages of hazmat for safe transportation, they must take into consideration the normal conditions of transport, to include environmental changes such as temperature extremes which may be encountered. Depending on the volatility of a chemical, increasing the temperature to which a container is exposed can increase the internal pressure exerted on it. Although inner and single packagings intended to transport liquids and receptacles for gases must be successfully tested to sustain certain internal and external pressures, the external temperature may increase the internal pressure beyond that for which the container is tested, consequently rupturing the receptacle and releasing the contents. Depending on the quantity and nature of the material, the safety of personnel and the public could be seriously jeopardized.

Some containers exposed to high heat may noticeably bulge, and those made of metal may exhibit a metallic "pinging" sound as internal pressure increases. This increase in pressure could also cause caps and lids to pop off. The sound of escaping vapors indicates not only high internal pressure, but also that the material likely has a high vapor pressure and that, under the current atmospheric conditions, will produce a large quantity of vapors. If these vapors are flammable or toxic, the potential for dangerous exposure for anyone nearby will increase. Aerosols stored at extremely high temperatures can violently rupture and rocket, endangering personnel and property.

Packagings containing hazmat that have been compromised do to heat must not be offered for transportation as this will only increase the risk of release. To emphasize, below are some examples of products, including aerosols that were exposed to high temperatures, therefore compromising the integrity of the packaging and/or causing a violent failure or release while being stored or transported.

The IATA dangerous goods regulations address this risk specifically for self-reactive substances of Division 4.1 and organic peroxides of Division 5.2 being transported by air, requiring the "Keep Away from Heat" label to be shown, along with a statement on the Shipper's Declaration requiring the material to be protected from direct sunlight and sources of heat, in an adequately ventilated area. These are sensible storage practices to employ for all dangerous goods being stored or transported when temperatures are elevated. To reduce risk, move containers from an area of direct sunlight into one that is shaded or cooler and well-ventilated. (These safeguards also apply to the transport vehicle the material is being transported in.) Pay attention to warehouse storage areas where materials may receive direct sunlight, such as near loading dock doors, and adjust storage accordingly.

Stay safe and don't let your hazmat sizzle in the summer heat!

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