

Do you store cylinders properly?

October 2006

**Fire starts
here following
propylene
release from
overheated
cylinder**



**Spreading fire
three minutes
later**



June 24, 2005 was a hot, sunny summer day in St. Louis, with temperatures reaching 97F (36C). Operations at a gas cylinder packaging and distribution facility proceeded normally during the morning and early afternoon. However, about 3:20 pm, a technician retrieving cylinders from an outside storage area saw a ten-foot high flame coming from a cylinder and activated the fire alarm. Propylene gas had been released from the relief device on a cylinder valve and ignited. Workers and customers evacuated. The fire spread to adjacent cylinders, which ignited and began exploding, flying into other areas of the facility, and spreading the fire. After 4 minutes, the fire covered most of the facility's flammable gas cylinder area and explosions were frequent.



**Facility
Damage**



**Community
Damage**



Dozens of cylinders and cylinder parts were propelled into the community and were found on sidewalks, front yards, backyards, courtyards, parking lots, and under cars. Damage included a burned empty commercial building, fire-damaged cars, a three-foot hole in the wall of one residential building, broken windows, and other destruction to residential and commercial buildings. Cylinder parts were found as far as 800 feet away.

Did you know?

- Some materials stored in containers such as drums, cylinders, and pails can be heated to a hazardous temperature if they are stored outdoors and exposed to direct sunlight.
- The hazard can be a result of decomposition, polymerization, or other chemical reaction, or it can simply be over pressurization of the container because of the vapor pressure of the contents, as in the incident described above.
- In this incident, direct sunlight, and an unusually hot day, probably raised the temperature of the cylinder and its contents to about 150F (65 C), sufficient to open the relief device and release the gas.

What can you do?

- Follow guidelines for safe storage of chemical containers found in the material safety data sheet.
- For gas cylinders, follow guidelines from industry associations such as the Compressed Gas Association, consensus standards such as those from the National Fire Protection Association, and recommendations from material suppliers.
- Minimize the number of cylinders in process areas.
- Read the United States Chemical Safety and Hazard Investigation Board Safety Bulletin on this incident for more information about the incident and recommendations for prevention of similar incidents: http://www.csb.gov/index.cfm?folder=news_releases&page=news&NEWS_ID=296

Don't store volatile or temperature sensitive materials outside in the hot sun!