Bottle Explodes in Storage

On a Monday morning, a SFU Research Associate discovered that a 100 ml glass stoppered bottle had exploded inside one of the lab fridges over the weekend. The bottle had contained a solution of potassium hydroxide (KOH) and zinc powder prepared in 2007. KOH and zinc reacted to form hydrogen gas, which built up enough to cause the bottle to explode.

Regularly identify and dispose of expired or unused samples, solutions and reagents.

Things to consider

Use secondary containment for all liquids in storage cabinets or fridges to contain potential spills.

Regular fridges are not designed for chemicals due to the presence of hot surfaces (light bulbs), possible ignition sources (motor) and the drain designed for water collection. Consider using only lab safe fridges for chemical storage. Flammable materials must never be stored in domestic refrigerators.

Recommendations

Label and date all solutions, samples and reagents when received or produced.

Mark unstable solutions (i.e., with components that may react with each other), samples and reagents with an expiry date (e.g., peroxide formers).

Ensure departing employees/students transfer responsibility for their samples and solutions or dispose of them.

During monthly and annual inspections, identify expired or unused samples, solutions and reagents for disposal.