

What do these solvents have in common?

- Diethyl Ether
 - Isopropanol
 - Tetrahydrofuran
 - Dioxane
 - Chloroform
 - Diglyme
1. We use them in our lab every day
 2. They can become explosive when stored for long periods

An explosion at UC Irvine

- An undergraduate researcher was working in the laboratory when the apparatus she was using exploded, sending glass fragments into her face and upper torso.
- She was taken by ambulance to the hospital where she received stitches above her eyes and other treatment for her injuries. She was released from the hospital the same day.

Peroxide forming chemicals

- The researcher had been using a rotovap to remove organic solvents from a product.
- THF and diethyl ether were used in the reaction: Both form peroxides over time.
- The evaporation in the rotovap further concentrated the peroxides in the vessel
- Any movement of a vessel can cause dry and shock sensitive peroxides crystals to explode.

The policy at ND

- Monitor risky chemicals regularly
- Dispose of containers when “expired”
 - 6-12 months after opening
- If you discover time-sensitive materials that have expired or are undated:
- Never touch or try to open a container of peroxide-forming liquid if there are whitish crystals around the cap or in the bottle.
 - The friction of unscrewing the cap could detonate the bottle.
- Visually inspect the bottle for product identification and expiration date.
- If dangerous or in doubt call RMS (631-5037)

At UC Irvine...

- In this case, the THF used did not contain a stabilizer (such as BHT) to slow the rate of peroxide formation and the four-liter bottle was nearly empty. A sample from the THF bottle was later analyzed with a simple test and found to contain excessive peroxides (more than 100 mg/l).

Practical precautions

- Order chemicals with a stabilizer if possible
- Order smaller containers
 - Use them before the can expire
 - A big bottle may be cheap, but isn't always best
- Write your name, the date received, and date opened on all chemicals you buy
- Much more information on the topic is available at:
[http://riskmanagement.nd.edu/assets/163108/
storage_and_disposal_of_time_sensitive_chemicals.pdf](http://riskmanagement.nd.edu/assets/163108/storage_and_disposal_of_time_sensitive_chemicals.pdf)
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