

CLOSE ENCOUNTERS OF THE LAB KIND

THE SANTAYANA REPORT

George Santayana was a Spanish-American philosopher, essayist, poet, and novelist. In 1905, he penned the famous aphorism “those who cannot remember the past are condemned to repeat it.” More than a century later, the saying reverberates with professionals the world over. The following is a summary of a recent incident at Columbia University. The information presented is intended to provide awareness and help readers plan against the occurrence of a similar situation in their laboratory or work area.

It's All in the Mixture

Recently a member of one of our research laboratories used plastic centrifuge tubes to spin a phenol-chloroform-isoamyl alcohol mixture. In the process, the tubes failed and released the mixture. Fortunately, the spill was contained almost entirely by the rotor buckets, resulting in no damage to the centrifuge, and a quick clean-up of the material. To avoid the incident the lab should have utilized tubes compatible with the mixture being used.

Taking into account the mixture used, high-density polyethylene (HDPE), for example, is not recommended for use with chloroform, which damages the polymer. The same is true for a 10% phenol solution. So, it is no wonder that the mixture of chloroform and phenol leaked from the tubes used in the above incident. Meanwhile, polypropylene (PP) is relatively resistant to both those chemicals up to 72°F but is not recommended for continuous use with chloroform and/or phenol because softening, swelling, and loss of strength may occur. Not to mention the physical strain (centrifugal force) the tubes are subject to during centrifugation.



Lessons Learned

- Before attempting to centrifuge a given mixture it is a safe practice to consult manufacturer-provided chemical resistance, thermal stability and centrifugation rating (the maximum limit of centrifugal force) to select tube type for use.
- It is also important to utilize a chemical compatibility database (such as www.coleparmer.com/Chemical-Resistance).

For further information, or to view previous Santayana Reports, please visit our [lessons learned website](#). For any other safety related matter, please contact the [EH&S office](#).