

LETTERS

Silver Nitrate + Ethanol = EXPLOSION

To the Editor:

N. M. Doherty (University of Washington) drew our attention to a serious explosion in her laboratory during the purification of silver nitrate using the procedure in our book on the "Purification of Laboratory Chemicals", 2nd ed.; Pergamon: London, 1980, p 520. The following is quoted from her letter:

As per your procedure the student was recrystallizing silver nitrate (20 g) from high purity (quartz-distilled, deionized) water (~100 mL) by the dropwise addition of high purity ethanol (~1 mL total). After collection of a first crop of crystals (~7 g), the student, following normal crystallization procedures, produced a second crop of crystals by concentration of the mother liquor by heating on a steam bath, then dropwise addition of another ~1 mL of ethanol. A contact explosion occurred during collection of the second crop when the student agitated the slurry on a sintered glass frit with a spatula. This explosion was quite violent, shattering the glassware involved and sending large chunks of glass as far as fifteen feet away. Very fortunately, the student was not cut by any of the glass shards; however, the potential for major personal injury was present.

We were unaware of this danger, but explosions from silver nitrate and ethanol were known to occur and the hazards have been documented [Tully, J. P. *News Ed. (Am. Chem. Soc.)* 1941, 19, 250; *Chem. Abstr.* 1941, 35, 3092⁸; Garin, D. L.; Henderson, K. O. *J. Chem. Educ.* 1970, 47, 741; Bretherick, L. "Handbook of Reactive Chemical Hazards", 3rd ed.; Butterworths: London, 1985, pp 13-14.

We are grateful to Professor Doherty for pointing out the dangers of this purification to us, and we should like to inform the chemical community of this grave error in our book. This will be rectified in the third edition.

D. D. Perrin

W. L. F. Armarego

D. R. Perrin

John Curtin School of Medical Research
The Australian National University
Canberra, ACT, Australia

Inorganic Waste Disposal

To the Editor:

The disposal of toxic inorganic waste can create serious environmental problems and hazards. Contrary to most organic waste, inorganic waste cannot be eliminated by incineration, and its proper disposal can be fairly expensive to most universities and industries. As long as the toxic substances remain in some soluble form they can eventually permeate into water supplies or otherwise pollute the surroundings.

At this university I have found a practical way to trap hazardous inorganic lab waste and make its disposal safe. Aqueous solutions or suspensions of waste material are simply "frozen" in a rigid and insoluble matrix of Portland cement. This procedure is best handled in a container lined with a polyethylene bag. First, the acid waste is neutralized in a slurry of slaked lime. Next, the rest of the waste is added and stirred with sand and enough Portland cement to make

a mixture that can set up over night. The resulting block of concrete in the polyethylene bag can be buried safely at a relatively minor cost.

Nicholas M. Irving

Universidad Del Valle De Guatemala
Apartado Postal No. 82
Guatemala, Guatemala, C.A.

Explosion Hazard for Carbon Disulfide Reaction

To the Editor:

We would like to call attention to the **danger of explosion of carbon disulfide in contact with potassium metal**. On following a recently published procedure (1) for the reduction of carbon disulfide with alkali metals, violent detonations have occurred in laboratories in France and the United States resulting, in one case, in hospitalization of the personnel involved. The threat of explosion of mixtures of carbon disulfide and potassium or potassium-sodium alloys has previously been noted (2).

The Steimecke et al. procedure affords various 1,3-dithiole-2-thione-4,5-dithiolate salts which have proven to be versatile intermediates in organo-sulfur chemistry. Following their procedure, no explosions have occurred when sodium is substituted as the dissolving metal reductant although we advise caution when handling these dangerous reagents.

Literature Cited

- (1) Steimecke, G.; Sieler, H. J.; Kirmse, R.; Hoyer, E. *Phosphorus and Sulfur* 1979, 7, 49.
- (2) Bretherick, L. *Handbook of Reactive Chemical Hazards*, 3rd ed.; Butterworth: London, 1985.

A. Moradpour

University of Paris Sud
France

R. R. Schumaker

CNRS-CRPP Talence
France

How Do We Close this Tube?

To the Editor:

The illustration in Mark Bambenek's article [1984, 61, 889] shows a label for "glass tubing" when the text specifies glass rod. In addition, the plastic tubing, sleeved over the glass rod, must provide tension to hold the dialysis tubing in place, yet I cannot see whether the plastic tubing is split end-to-end or only along the span of the collapsed dialysis tubing. If the plastic tubing forms a C-ring over the glass rod then the plastic tubing—rigidity and tension—should be specified by manufacturer's brand and lot number.

W. H. Longenecker

USDA/NAL 200
Beltsville, MD 20705

To the Editor:

Longenecker has noted discrepancy between text and drawing. Actually both glass rod and tubing have been used successfully (fire polished in both instances). In the matter of the plastic tubing, the slit runs the entire length of the section, thus forming a C-ring over the dialysis tubing and the supporting glass tubing/rod. We have successfully used PVC ($1/16$ -in. wall) tubing from a number of manufacturers.

Mark A. Bambenek

Saint Mary's College
Notre Dame, IN 46556