Safety in Use of Concentrated Sulphuric Acid in Chemistry Experiments

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Concentrated sulphuric acid is a useful reagent used in many chemical reactions. Nonetheless, as this chemical is corrosive in nature, accidents related to the use of this chemical have occurred at times. Some accidents occurred when the acid spurted out of test tubes as solutions containing the acid were heated. Some accidents occurred when water was added unknowingly into the acid, causing the latter to splash out of its container. Actually, most of these accidents can be avoided by observing the following tips.

1. Whenever possible, solutions containing concentrated sulphuric acid should be heated in a boiling tube instead of a test tube. The amount of solution in the boiling tube should be small so that constant swirling of the solution can be accomplished easily during heating.

2. If only a small amount of concentrated sulphuric acid is needed for the reaction, the acid should be dispensed using small dry dropping bottles. It is not advisable to use a large reagent bottle for storing the acid and then use ordinary laboratory droppers for transferring the acid. Ordinary droppers used in the laboratory are easily contaminated with traces of water trapped inside the rubber teats. The use of such droppers under these circumstances may pose dangers to the teachers or pupils concerned.

3. If a substantial amount of concentrated sulphuric acid is needed for the reaction, the acid should preferably be transferred directly from the reagent bottle to the reaction flask, or indirectly using a measuring cylinder. The measuring cylinder should also be labelled and used specifically for the acid. It is not advisable to store or transfer the acid using extra containers such as beakers or conical flasks. This avoids possible contamination by other chemicals and eliminates the risk of mixing the acid with any aqueous solution in the inappropriate order. Also, if more than two reagents are involved, the acid should be added last. Concentrated sulphuric acid added as the last reagent also helps to ensure that no aqueous solution is added onto the acid by mistake. It is also important that concentrated sulphuric acid, once measured into a measuring cylinder, should be transferred to the reaction flask as soon as possible to avoid hazards due to the toppling over of the measuring cylinder. Summarily, the addition of concentrated sulphuric acid should preferably be the last step in the carrying out of a chemical reaction.