

Learning by Accident: Accident with Zinc Powder

Learning by Accident is an ongoing *Crucible* feature, in which real-life lab accidents or incidents are recounted and explained. The goal is to highlight the consequence of ignoring safety rules so that science educators will be further encouraged to become knowledgeable, and to take appropriate action, in areas of safety that affect their daily activities in the science classroom. Submissions are encouraged. Anonymity will be guaranteed. Please send written descriptions to Ian Mackellar, STAO Safety Committee Past-Chair, Box 191, MAITLAND, ON KOE 1P0, or email: ian_mackellar@stao.org

Submitted by a member of the STAO Safety Committee

Occasionally I have students turn pennies into silver and gold using zinc powder and 4 mol/L sodium hydroxide solution. Some years ago when I first did this, the excess wet zinc powder was wrapped in paper toweling and thrown into the garbage. An hour later the garbage pail burst into flames!

I later discovered that this powder is especially susceptible to oxidation as it dries out and the trapped heat was enough to ignite the paper towel.

After that I always let the wet powder dry out overnight in the fume hood after which disposal in the paper towels posed no hazard.

Comments from the STAO Safety Committee

Zinc powder is flammable and may ignite if exposed to sparks or flames. Contact with water releases a flamma-

ble gas (hydrogen). It is therefore important to keep containers tightly closed and dry. It is also important to take extra precautions in disposing of wet zinc powder, as suggested above. Disposal of dry zinc powder can be safely accomplished by mixing with 20 parts of dry sand and placing in the regular waste container.

Teachers should take care to always use coarse powder or turnings in this activity and NOT zinc dust. Metal dusts in general are banned by most School Boards since, like zinc dust, many are highly flammable and can be spontaneously explosive if the air is moist.

The solution of sodium hydroxide (4 mol/L) used in this activity is extremely corrosive. This very concentrated solution should only be handled by responsible senior students, wearing goggles giving chemical splash protection.

