



Safety Q and A: You have questions? We have answers!

The STAO Safety Committee

The STAO Safety Committee welcomes enquiries, with respect to safety issues, from STAO members. Please send your questions to the Safety Committee Chair (ralph_chou@stao.org). Your questions and the STAO Safety Committee responses may be published in *Crucible*, particularly if the information is deemed of general interest to other STAO members. Anonymity will be guaranteed.

QUESTION# 40: *I work in a school in which we have all of our salts stored alphabetically in a storage room. Do I have to arrange them in groups of anion names as recommended in the STAO publication Stay Safe! or can I leave them in their metal cation name order (e.g., aluminum sulphate, copper chloride, lithium chloride etc....) to facilitate all non-chemistry science teachers locating chemicals more easily. P.S. Our acids and flammables are in separate containers.*

RESPONSE: The literature recommends that general inorganic chemicals should be stored, on shelves, alphabetically according to their anions (never alphabetically according to their cations except within an anion group!).

This arrangement minimizes the risk involved should an oxidizing agent come into contact with a reducing agent. If, however, steps are taken to store all oxidizing agents (e.g., metals, nitrates, iodates, peroxides, dichromates, chlorates, permanganates) separately, then it would seem reasonable that storage of all other general inorganic chemicals alphabetically by cation might be considered.

QUESTION# 41: *I am curious about the use of cathode-ray tubes in the production of charged particles for*

demonstrating the effects of magnetic fields in the new SPH4U course. I am partly concerned about the high voltage, and more concerned about x-ray emissions from these tubes. Please advise on safety concerns for this investigation.

RESPONSE: Electricity supplies with voltages greater than 40 volts are regarded as potentially dangerous. Accordingly, the STAO Safety Committee recommends that the use of high voltage power supplies (→ 40 volts) should be restricted to teacher demonstrations ONLY!

X-rays can be produced by cathode-ray tubes operating at more than 5000 volts. High doses of X-rays give rise to “radiation burns” and even low doses may cause malignant growths. Accordingly, if cathode-ray tubes are used for investigations in school science laboratories, it is highly recommended that operating voltages be kept as low as possible with 5000 volts as the maximum. Appropriate shielding, effective in absorbing the radiation, should also be used. Further guidance with respect to protection from radiation hazards in schools is available in the STAO publication *Stay Safe!*