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# 47: Shouldn't all chemicals that are confirmed or suspected of being carcinogens be banned for use in school science laboratories? Also, what about chemicals that are confirmed or suspected of being mutagens (cause changes to genetic material) or teratogens (cause birth defects)?

Safety committee response:

Not necessarily. Carcinogenic substances (and those classed as **MUTAGENIC OR TERATOGENIC**) are particularly emotive. There is a danger that this emotive reaction will cause the relatively remote risk of a chemical's low carcinogenic, mutagenic or teratogenic potential to be exaggerated. Toxicological information can be frightening. If one accepts what is stated above, then a substance with an LD_{50} of 261 mg/kg (oral, rat) and described on an MSDS as *'should be treated as a suspected carcinogen. (Cat.3) Evidence of reproductive effects'* would not be suitable for use in schools. Yet this is the WHMIS data for caffeine that many of us consume in small quantities in coffee, tea and soft drinks! Caffeine certainly represents a hazard to health. Whether there is a significant risk depends on the amount, how it is used and the frequency of use. A similar argument could be applied to other substances of low carcinogenic potency. The many carcinogens encountered in everyday life (e.g., components of paints, pesticides, adhesives, epoxy resins, cigarette smoke, some foodstuffs, traffic fumes, etc.) are encountered in a relatively uncontrolled environment. The recommendation in *Stay Safe!* (see below) does not discount the possible use of substances classified as Cat. 3 carcinogens provided they are handled with care and on a small scale. It does discourage the use of Cat. 1 carcinogens.

NOTE: The following information with respect carcinogenic substances is extracted from page 37 of *Stay Safe!* published by STAO/APSO (ISBN 1-894592-22-0).

Category 1: Substances known to be carcinogenic in humans. These are not recommended for school use and may well be banned by local District School Boards.

Category 2: There is a presumption that these substances are carcinogenic in humans, generally based on animal studies. To some extent the risk depends on whether they are hazardous by ingestion, inhalation or skin contact, their volatility, and how the chemicals would be used in schools (e.g., the likelihood of producing dust).

Category 3: There is some evidence from animal studies that there may be cause for concern when using these substances, but the evidence is such that in most cases there is insufficient data to make a satisfactory assessment. While such substances should be handled with care and on a small scale, schools should not feel inhibited in using them where there is a good educational reason to do so.