



Biological myths and bans

Following the publication of the article on myths about banned chemicals¹, a member wrote to the Safeguards in Science committee for details about similar myths and bans in biology. Below is a copy of the subsequent correspondence from the committee. A list of organisms, biological substances or activities which are believed by some teachers to be 'banned' or otherwise not allowed includes the following. Note, however, that some employers may have produced local rules banning practices or substances and where these rules exist teachers must follow them. Such rules need not necessarily go unchallenged if teachers believe them to be over-restricting the provision of good science education.

CHEEK CELL SAMPLING Not banned but the DfE has said (in AIDS some questions and answers) that the practice of blood and cell sampling 'should be discontinued' because of the risk of the transfer of HIV. (Some LEAs had specifically banned blood sampling even before AIDS became an issue.) The ASE believes the routine for cheek cell sampling suggested by the Institute of Biology, to be safe, although the use of ethanol or disinfectant would be better replaced by sodium chlorate(I), and has tried unsuccessfully to persuade the DfE of this. However, it has not been accepted by the DfE and therefore cannot be considered to be an approved method of safely sampling cheek cells. In response to enquiries from the IOB, the DfE stated that its guidance is 'advisory rather than mandatory'; it stands because the department thought it necessary to err on the side of caution because of the inability to guarantee sufficiently close supervision to ensure that pupils did not disregard the procedures and thus be exposed to risk. The reply goes on to say that 'it is for institutions, teachers or lecturers to decide their own policies in the light of both the (DfE) guidance and their knowledge of local circumstances'. Remember too that local rules made by employers must be followed.

USE OF BLOOD FROM ANY SOURCE There is no ban on the use of blood, including time-expired human blood for transfusions which has been screened for HIV. Schools are not very likely to be able to obtain such human blood but can use animal blood from abattoirs or butchers providing normal hygiene practices are followed.

SALIVA There has never been any authoritative suggestion that the use of saliva should be banned. We would advise, however, that pupils should rinse out their own contaminated glassware and then immerse it in a bowl of 1% chlorate(i) (hypochlorite) solution or even warm water with washing up liquid. This is good hygiene practice and helps to make the life of the technician a little more tolerable.

BULLS' EYES The DEE recently wrote to LEAs, GM and independent schools suggesting that the practice of dissecting bulls' eyes should be discontinued because of the 'remote theoretical risk' from BSE. In a clarifying letter, the DEE agreed that its suggestion was advisory and any ban on the dissection of bulls' eyes was entirely up to schools or LEAs. Some LEAs have banned the practice, suggesting sheep or pigs eyes as alternatives.

GIANT AFRICAN LAND SNAILS These gained prominence through the parasitic rat lungworm (*Angiostrogylus cantonensis*) which uses the snails as an intermediate host. The parasite can transfer to humans through infected mucus or faeces or if the snails are eaten without thorough cooking. The parasite is reported in

¹ Borrow, P, 'That's banned, isn't it? Some safety myths in science', SSR, 1993, 74(269), 51-4.

countries which are far warmer than the UK and completion of its life cycle in the UK is believed to be virtually impossible. The problem is therefore one of recently-imported snails and not of ones bred in the UK. At no time were the snails banned from schools. Normal hygiene practice; washing hands with soap and water after handling animals, should be followed. Schools should ensure snails are obtained from stock bred in this country.

TERRAPINS Not banned but, like most reptiles, may carry salmonella bacteria, which can contaminate the water in which they live. The problem increases with a decrease in frequency of cleaning out tanks. We have suggested that schools should avoid terrapins because of this risk but this does not amount to a ban. Some species can actually bite quite fearsomely which make them less useful in schools anyway. In *Be safe!* we suggest terrapins and tortoises are unsuitable for primary schools.

COCKROACHES Apparently some teachers believe these to be banned. We have not come across any, even local, rule to this effect. Possibly there is a worry of infestation or confusion with locusts, which are also not banned, but which do present an allergic risk to some people. In the main such risks are to teachers and technicians and precautions when dealing with locusts are well documented.

POND DIPPING There are risks involved with pond dipping but sensible precautions and good hygiene practices are generally enough to deal with them. Precautions may extend to not using certain ponds which present too much of a hazard but this is certainly not a ban on pond dipping. Risks include: Physical injury through falling in or slipping on wet rocks etc; good pupil management is essential. Weil's disease, a bacterial infection from water contaminated by urine from infected rats. Toxins produced by blooms of blue-green algae (now called cyanobacteria).

CASTOR OIL SEEDS The toxicity of these seeds is reasonably well known and certainly well documented. They present no risk as long as they are not eaten.

MILLON'S REAGENT The test involves heating mercury compounds in concentrated nitric acid which represents a considerable potential hazard. Although we advise against using the test, certainly below sixth form, any bans will be local only.

METHANAL (FORMALDEHYDE) A toxic substance which is essential for certain tasks (eg killing microbe cultures before examination; fixing tissues). The hazards associated with it must not be underestimated but its potential for producing carcinogenic chloromethoxy-chloromethane when stored with concentrated hydrochloric acid was over estimated. There are alternative, less-hazardous long-term preservatives for biological specimens, etc.

PHENYLTHIOCARBAMIDE (PTC); PHENYLTHIOUREA (PTU) Used in taste investigations. The compound and stock solution are toxic but paper strips impregnated with tiny amounts of solution are OK.

HUMAN URINE It is easy to imagine the difficulty of encouraging pupils to provide samples, but the practice is not banned. It would be prudent to treat contaminated glassware with sodium chlorate(I) solution.

NINHYDRIN There is no evidence at all that ninhydrin is carcinogenic. It is an irritant and therefore should be used in a fume cupboard.

P Bunyan