Chemicals in the eye

Recently, a year 11 pupil lost the sight in one eye as a result of a solution being squirted into it, probably deliberately, by another pupil during a science lesson. At the time, there was some doubt as to whether the solution was dilute sulphuric acid or alkali, but the surgeons concerned were of the opinion that the amount of damage caused could only have been the result of alkali. The solution was in a small plastic bottle, with a concertina type of dispenser. Schools may wish to review the practice of putting hazardous chemicals in such containers. It would also be sensible to make sure that the concentration of acids and alkalis used are reduced to safer levels whenever possible.

Although the teacher had attempted to wash the pupil's eye with running water by holding the head under a tap for ten minutes, this did not prevent the damage. If the eye is being flushed out following such an incident, it is important to stress that the eye lids must be held open, so that the eye ball can be flooded with water. Some force is likely to be necessary to hold the pupil's head under the tap and hold open the eye lids, as the child will be in pain. The use of a short length of rubber tubing attached to the tap will make the process much easier. Under the Management Regulations, employers must make arrangements for training to be carried out in emergency procedures such as this. It is not sufficient for staff simply to be aware of what to do — they should actually practice doing it. A science department may be instructed to organise its own training from time to time, and build this into its safety policy.

In the case of alkalis, irrigation may well need to continue for hours, in order to leach out hydroxide ions which have become absorbed. Acid, in effect, seals the skin — alkali goes through the tissue, in the case of the eye, possibly even as far as the retina. The public, including pupils, tends to assume that acids are the greatest danger and may well say that a chemical in the eye is acid, whatever it really is. Therefore, if there is any doubt whatsoever, it is safest to assume that alkali is involved.

A science teacher or technician is likely to be the first person on the scene and must start irrigation at once. When a qualified first aider arrives, it may be necessary to explain that irrigation must continue. The science teacher or technician will probably know more about the appropriate treatment than the first aider, who may well be confused about the differences between acids and alkalis anyway. The patient will need to be taken to hospital. First thoughts may be to use a staff member's car but the eye must be continuously irrigated throughout the journey. In most cases, therefore, it will be necessary to call an ambulance. Paramedics may also be confused about acids and alkalis, so when the ambulance arrives the need for continuous irrigation must be stressed. It would be sensible to tie a label to the patient, giving relevant details.

Although in the lesson the teacher had provided several reminders about the need to wear eye protection, clearly s/he was not successful in this instance. A simple demonstration of the effect of acid and alkali on eyes obtained from a butcher might convince some pupils of the risks!

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