The Association for Science Education
Promoting Excellence in Science Teaching and Learning

Reducing eye injuries

In the past we have not felt it necessary to suggest that eye protection should be worn when using lime water. A saturated solution of calcium hydroxide is about 0.03 mol dm^{-3} with respect to hydroxide ions, which is below the concentration at which hydroxide ion solutions are classed as irritant (0.05 mol dm^{-3}). However, in a recent incident, a pupil was blowing through a straw into lime water and some splashed into her eye. Prompt treatment by the school prevented any damage, but certainly there was some discomfort. Particularly in this activity - blowing into lime water - splashing would seem quite a likely consequence and, therefore, we would now recommend wearing eye protection

Alkalis in the eye are much more dangerous than acids of comparable concentration. Sodium and potassium hydroxides are now classed as corrosive down to 0.5 mol dm^{-3}, whereas even sulphuric acid is classed as corrosive only down to 1.5 mol dm^{-3}. It would make sense if, for routine laboratory use, alkali concentrations were kept a little below 0.5 mol dm^{-3}, as this should help to prevent permanent damage to the eye. Schools often use 1 mol dm^{-3}, 2 mol dm^{-3}, solutions (of all sorts of reagents), for no better reason than they have always done so. Clearly, if alkali concentrations are lowered it might well be sensible to make comparable reductions in the concentrations of acids, salts, etc. Nearly all the common practical activities will work just as well with, say, 0.4 mol dm^{-3}, as with 1 mol dm^{-3} or 2 mol dm^{-3} solutions. A few may not, but that would be a good occasion on which to make a fuss and really insist on the wearing of eye protection. Making this change would be safer and would save money, as stocks would last much longer.

This item was originally published in *EiS* in September 1996 and was checked by the ASE Health & Safety Group in May 2016 to ensure it still offers valid advice.