

developed with special organic solvents, some of which were toxic. This did not initially cause any great concern, since most plate-makers were accustomed to dealing with strong acids and solvents in the production of deep-etch and multi-metal plates. During recent years a greater emphasis has been placed on the need for non-polluting and less hazardous chemicals in plate processing.

In the case of positive working pre-sensitised plates this need has to a great extent been met, since the developers for these plates are generally water-based. This has not been true for many of the negative working plates where the developers often contain organic solvents or alcohols in significant proportions. This has resulted in a demand, particularly from the Scandinavian countries, for negative working plates with developers based on similar chemistry to that of the positive plates.

The ultimate in a non-polluting plate would appear to be one developed with water alone, and some of these have been produced. See Chambers (1980), Deaver (1979), Reproduction (1980) and Cunningham (1980). But even here the used developer would be contaminated with the removed coating (and to a very small extent it could be said to be polluting). Producing a durable plate developed by water alone is, when we consider what is required of the coating, a very difficult task for plate manufacturers. With any negative working plate the material coated onto its surface needs to physically change by light action into a medium which is oleophilic and insoluble in the developer and any other materials with which it makes contact in the printing process. If the developer is to be water the unexposed coating must be water soluble and therefore hydrophilic. As a result of exposure the coating must go through a complete change to become hydrophobic and oleophilic. In addition to this requirement it should be possible to easily remove the unexposed non-image coating, leaving a fully desensitised base metal, but retaining a firmly bonded coating in image areas. If the main effort is directed towards producing a coating which is easily removed by water, it is more difficult to ensure that the remaining image will be durable and firmly bonded. If, on the other hand, the coating is made more resistant to water and has a firmer bond with the base metal, it is likely to be more