



## **Combating air pollution** *Industrial emissions*

### **Peter Evans**

In cities like Los Angeles, the smog problem has become critical, but even in Britain, regulations brought in through the 1990's, to curb VOC emissions from activities, such as printing painting, and solvent cleaning. One British aerospace factory, was just beginning to deal with the new legislation. British aerospace uses solvents for degreasing aircraft parts prior to fixing or spraying. Some solvent is found in assembly, but most is used in huge vapour degreasing tanks. As a metal part is inserted into the tank, solvent vapour condenses, dissolving grease. The vapour is denser than air, so it should stay inside the tank. There are also refrigeration coils, around the edge of the tank, to provide a temperature barrier. But solvent does escape, mostly when the part is lifted from the tank after cleaning. Some vapour is also sucked off through rim extraction of air around the lip of the tank, a safety measure. Paints also contain solvent, so similar problems apply to paint spraying. The process of drying often depends on the evaporation of solvent in air. So, how can British aerospace come to grips with its legal obligations. Solvent comes into the factory from a number of supply companies. Before coming up with solutions, the company must find out exactly how much solvent is being used, and where. Already, there's an incentive on the floor to be more aware of emissions. Even screwing the top back on a can will help. But what strategies are open to containing the solvents on a large scale. Automatic lids are already fitted to some tanks. The lids only open when a part is going in or coming out. But this will not help to deal with fugitive emissions due to drag out.

### **Pauline Edge, Development Engineer, Chemistry**

Longer term, I think we ought to be looking at, looking alternatives for solvents, looking at aqueous alternatives, such as aqueous cleaners, or water based paints, water based adhesives.

### **Henry Welbourne, Specialist Engineer - Chemistry**

Unfortunately at the present we have knock on effects with the aqueous cleaners, be it spray spray clean, be it emersion clean Etc, with the sewage works. Effluent goes into the sewers and off to the sewage sewage works, which again can cause us a problem.

### **Peter Evans**

There's no point in moving away from one product which causes air pollution, to another which causes water pollution or, indirectly increases pollution elsewhere through a greater use of fossil fuels. The paint shop seems a simpler problem to deal with. Water based paint, is already being used in car manufacture, can it be used to spray aircraft. Here, British aerospace is in the hands of the paint manufacturers.

### **Roger Blackford, European Marketing Manager ICI Aerospace & Defence Coatings**

Most people regard aircraft paint as what they see on the outside of an aircraft, the coating which looks coloured and glossy. But in fact most paint that is used on an aircraft, is that inside which you can't see, and it is used there mainly for its main function of anti-corrosive protection. One might think that the easy option is to go to a water born product. But there are constraints which make it very difficult to do this.

### **Henry Welbourne**

On the ground, it's at twenty degrees centigrade, when it takes off, it goes into let's say eighteen thousand thirty thousand feet, the temperature then, outside temperature maybe minus fifty. That paint film is stretching contracting all the time. It has to be resistant to, various oils, to things like, kerosene, the fuel to propel the engines, all these environmentally

unfriendly materials towards the paint. Even water, water in actual fact being one of the most aggressive.

**Peter Evans**

It might be difficult to eliminate solvents altogether, but there are ways in which emissions from paints can be reduced.

**Roger Blackford**

One way is to merely have a reduced solvent content product, a higher solids content material, to have the solvent which is used to reduce the viscosity for application, as water, in the so called water reducible products.

**Peter Evans**

That would be a simple option for British aerospace. Outside the factory lie eighteen hundred cars used by employees to drive to work. So it's not only the responsibility of industry to face up to the problems of pollution, the responsibility falls to every one of us, whatever we do at home or at work.