

Vinyl chloride: when OSHA stood up to industry

Vinyl chloride is a chemical widely used in plastics manufacture. It is a carcinogen, and the atrocious conditions of its use have caused countless suffering. The chemical industry has long held out against any highly regulatory preventive measures or reasonably protective exposure limits. In 1954, the industry's acceptable exposure limit was 500 ppm.

In 1959, V.K. Rowe, a Dow Chemical toxicologist privately admitted to a Goodrich counterpart that, "We feel quite confident ... that 500 ppm is going to produce rather appreciable injury when inhaled 7 hours a day, five days a week, for an extended period. As you can appreciate, this opinion is not ready for dissemination yet and I would appreciate it if you would hold it in confidence but use it as you see fit in your own operations" (cited in Sass *et al.*, 2005).

The big industrial groups concerned have for years ganged up to suppress information. Regulations to give workers more adequate protection eventually came in around the mid-1970s in both the United States and Europe. In October 1974, OSHA issued rules reducing the exposure limit averaged over an eight-hour day to 1 ppm. At the time, industry lobbied hard against this, giving dire warnings of plant closures and job losses.

If the subsequent rules requiring a cost-benefit assessment of the proposed regulations had had to be followed then, this limit would never have been issued, conclude a team of Georgetown University researchers (Ackerman, 2004).

When OSHA issued the new regulations, little information was available on the damage vinyl chloride was doing to exposed workers' health for two reasons: industry was steadfastly hiding then downplaying the scale of the problems; and the latency period for a cancer to develop after exposure to vinyl chloride can be as long as twenty years. The OSHA regulations were therefore applying a precautionary principle to the likely consequences of exposure.

At the time, OSHA had evidence only of 13 deaths of workers from angiosarcoma of the liver, but this bore out the findings of animal trials that vinyl chloride was a carcinogen. The data on other liver and nonliver cancers (brain, lung, haematopoietic and lymphatic system) were less systematic. The cost of applying a 1 ppm exposure limit had been calculated at US\$ 200 million a year. Factoring in the value given to a human life by the cost-benefit analyses of the 1990s, the gain yielded by each life

saved would have amounted to about US\$ 1.81 million. A cost of US\$ 200 million could therefore have been justified only by saving a hundred lives a year. At the time, the value of \$ 1.81 million itself was fiercely disputed by industry group economists – the Ford group costed a human life at \$ 200 000. This would have meant showing that the new exposure limit would save 1000 lives a year – an impossibility in a workforce of approximately 7000 exposed workers.

It was not until after the new regulations were issued that it gradually emerged how utterly inadequate the two terms of the cost-benefit equation were.

On the damage side, evidence emerged that exposure to vinyl chloride caused more than just liver angiosarcoma, and was behind a high level of excess mortality in the plastics industry. On the cost side, it transpired that use of the industry data had resulted in wildly exaggerated cost estimates.

A 1978 study put the cost of implementing the new regulations at \$ 20 million a year against the \$ 200 million calculated by OSHA using industry information. Other studies produced different evaluations, but all available research points to the real costs of applying the new regulations having been well below OSHA's estimate. The lowest estimate amounts to 7%, and the highest 25%, of the cost. Pace the claims of the firms concerned, there were no plant closures and no job losses.

The researchers are categorical in their conclusions, "Cost-benefit analysis would have shown that vinyl chloride regulation was too expensive for the benefits it produced. It would seemingly have been optimal, in cost benefit terms, to have allowed more workers to die of cancer every year in order to have cheaper vinyl siding on the market. (...)A rigid insistence on making regulations pass cost-benefit tests would, in retrospect, have gotten the wrong answer time after time. There is no reason to expect the same narrow methods to perform any better today" (Ackerman *et al.*, 2004, p. 56). ■

Further reading

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