

Bad [coolant] science

Scare stories and mis-information abound in the national press, but as technical people we are less easily influenced, aren't we? Andrew Allcock questions this comfortable assumption, revealing why

A feature common to many scare stories is that there is bad science or misunderstood science at their root. Then there are lobby groups and others with vested interests in pushing scare stories, not least publishers who want to sell newspapers, and an audience that believes 'no smoke without fire'.

Anyway, many in engineering are of a scientific and analytical persuasion, so you might think that this audience would be more resilient to scare stories. But it seems that this may not be the case. Take biocides as used in cutting oils and coolants – biocides kill bacteria.

One of these is formaldehyde. Now formaldehyde – think embalming fluid – is classified as a human carcinogen (cancer-causing substance) by the International Agency for Research on Cancer and as a probable human carcinogen by the US Environmental Protection Agency. A full explanation can be found at an American website*, while for an HSE view on this there are two studies**.

However, bear in mind that the cancer risk relates to exposure to free formaldehyde and its vapour: free formaldehyde is not found in coolants or cutting oils, it is held in chemical combination. Any formaldehyde released into the atmosphere sees a concentration of "well below" Occupational Exposure Limits. This latter quote comes from a position paper published by the Independent Union of the European Lubricants Industry***. Besides, the prevention or control of airborne mists is part of the HSE's guidance on metalworking fluids****.



Now bear in mind also that formaldehyde is present in the atmosphere, and that materials containing formaldehyde can release it as gas or vapour into the air. Formaldehyde can also be released by burning wood, kerosene, natural gas or cigarettes; through automobile emissions; or from natural processes.

The point is this: the next time you are presented with information about coolants from a company that is pushing a 'no formaldehyde' sales pitch, engage cynicism if the company says or implies that formaldehyde is linked to cancer. While that statement is not incorrect (although specific nasopharyngeal cancer rather than cancer in the broad sense and which engenders a greater negative reaction), it is definitely incorrect if the suggestion is that formaldehyde *as used in coolants* is linked with cancer. It has been

suggested to *Machinery* that there are those in Europe who sail very close to the wind on this point.

But no coolant company is going to try and swim against the tide and promote the use of formaldehyde biocides using complex information to justify its stance, while its competitors can simply bandy two words around – formaldehyde and cancer. It's a battle not worth the effort, *Machinery* was told.

As people of science and logic, those in engineering really should be better than the average. However, as humans we are susceptible to the scare story, and the underpinning science may be long and difficult to read. Yet if people aren't willing to read it they will have to go with somebody else's reading of it – and they may have an agenda that is not wholly altruistic.

The 'good science' facts can be found at:

* <http://www.cancer.gov/cancertopics/factsheet/risk/formaldehyde>

** The carcinogenicity of formaldehyde WATCH/2005/6

<http://www.hse.gov.uk/aboutus/meetings/iacs/acts/watch/130105/p6.pdf>

<http://www.hse.gov.uk/aboutus/meetings/iacs/acts/watch/130105/p6annex2.pdf>

<http://www.hse.gov.uk/aboutus/meetings/iacs/acts/watch/130105/p6annex3.pdf>

*** 'Formaldehyde-Releasing Biocides and Metalworking Fluids'

http://www.ueil.org/health_environment/documents/Formaldehyde.doc

**** The main health risks from working with metalworking fluids

<http://www.hse.gov.uk/metalworking/about.htm>