CORRESPONDENCE

Cancer risk from exposure to occupational acrylamide

Recently the results of a comprehensive epidemiological follow up study of cancer among workers with occupational annual exposure to acrylamide was published.1 With the exception of a weak significance for a raised incidence of pancreatic cancer the study found no other associations. At the conclusion of the study there is "little evidence for a causal relation between exposure to acrylamide and mortality from any cancer sites". The study was conducted in a factory producing acrylamide and the annual exposure was about 2 mg/m³ (range 0.2-10 mg/m³). The workers were divided into five exposure groups according to their individual exposure levels. For the five exposure groups the relative risks for cancer mortality were: 1.0 (ng) for the lowest group, 1.0 (2nd group), 1.0 (3rd group), 1.1 (4th group), and 1.3 (5th group).

An analysis of the data suggested that the observed relative risks were not independent of the exposure group but the differences were not statistically significant. The authors of the study concluded that there was no evidence for an increased risk of cancer mortality associated with exposure to acrylamide.

In addition to the lack of evidence for an increased risk of cancer mortality, the study also found no evidence for an increased risk of any other cancer site. The authors concluded that the results of the study were consistent with the findings of previous studies and that there was no evidence to support a causal relationship between exposure to acrylamide and cancer mortality.

The results of this study are in agreement with the findings of previous studies and provide further evidence that exposure to acrylamide does not increase the risk of cancer mortality.


and will continue to provide useful epidemiological information through future updates and analysis.

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Dose-response relation between acrylamide and pancreatic cancer

In their 1999 study of workers exposed to acrylamide, Marsh et al conducted an SMR analysis to examine several risk regression models to the data. In each analysis, they found risk of pancreatic cancer increased by about twofold for workers in the highest cumulative exposure group, but risk of pancreatic cancer did not increase monotonically with cumulative exposure in any of their analyses. Duration of exposure was monotonically related and mean intensity showed a nearly monotonic relation with risk of pancreatic cancer.

The cut-off points Marsh et al chose for the cumulative exposure groups are based on multiples of current and proposed regulated levels of exposure intensity. Because these cut-off points resulted in small numbers of expected deaths in the low and intermediate exposure groups, 1.08 and 2.74 respectively, we have regrouped the data to attempt to obtain more stable standardised mortality ratios (SMRs). These results are presented in table 1 and indicate a monotonic dose-response pattern with the SMRs increasing from 0.80 to 1.31 to 2.26.

Table 1 Observed deaths, expected deaths, and SMRs for cancer of the pancreas, all United States workers, 1950-94, local county comparisons, two lowest exposure groups combined

<table>
<thead>
<tr>
<th>Cumulative exposure (mg/m²·y)</th>
<th>Obs</th>
<th>Exp</th>
<th>SMR 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.001</td>
<td>30</td>
<td>37.5</td>
<td>0.80</td>
</tr>
<tr>
<td>0.001-0.29</td>
<td>5</td>
<td>3.82</td>
<td>1.31</td>
</tr>
<tr>
<td>&gt;0.30</td>
<td>9</td>
<td>3.98</td>
<td>2.26</td>
</tr>
</tbody>
</table>

In part based on the absence of a pattern of monotonically increasing risk with increased cumulative exposure, Marsh et al argue that “our findings for cancer of the pancreas should be interpreted with caution, in the context of an exploratory analysis to test risk hypotheses.” Nevertheless, given the sufficient evidence in experimental animals for the carcinogenicity of acrylamide, this study plays an important part in the evaluation of safety for occupational exposures to acrylamide.

Data when sparse, it is not always clear how best to choose cut off points the grouping we have shown results in a finding that is more compatible with the findings for duration and for intensity of exposure. It would be interesting to see if a regrouping of the exposure categories alters the results of the analyses based on internal comparisons.

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Epidemiology of pancreatic cancer

In the United States, 43,000 people die of pancreatic cancer each year. Epidemiological studies of pancreatic cancer have generated much interest among epidemiologists, statisticians, and cancer biologists. However, the epidemiology of pancreatic cancer remains one of the most challenging problems in cancer research. In this review, we will discuss the epidemiology of pancreatic cancer with a focus on the role of occupational exposures.

1 Burns CJ, Beard KK, Carmill JB. Mortality in chemical workers potentially exposed to 2,4-dichlorophenoxyacetic acid (2,4-D) 1945-94: an update. Occup Environ Med 2001;58:24-30.
Bullying in hospitals

As victims of bullying and proponents of emotional intelligence in the health profession we read with interest the article on workplace bullying.1 Kivimaki et al did not mention whether the responses were anonymous. Identified responses may underestimate the incidence of bullying in the cohort. Given that previous studies (mentioned by the authors in the discussion) have shown a considerable percentage of victims deciding to resign as a result of bullying, it is a pity that the article by Kivimaki et al did not contain similar data. The other two issues that should have been included were the duration of the bullying, and how many bullies are actually aware that they are bullies. These can be answered by asking the question: Have you subjected your colleagues to such bullying behaviour?

With doctors and nurses constituting 58% of the victims, we wonder whether the authors could reanalyse their data to see whether there is a higher incidence of bullying in the high stress specialities—such as adult intensive care and neonatal intensive care. We would also like to know whether the victims in their study were offered any counselling by their institutions, and if so, the nature and impact of the counselling.

Emotional intelligence is defined by the five emotional quotients of self awareness of feelings, emotional self regulation, self monitoring and goal setting, empathy, social skills, and communication skills.3 According to Goleman, "The rules for work are changing, we're being judged by a new yardstick: not just how smart we are, or our expertise, but also how well we handle ourselves and each other."4 Emotional intelligence is considered more important than intelligence quotient (IQ) in enabling people to function well in society.5 We suggest that emotional intelligence, which can be taught, can be an important solution in reducing the incidence of bullying in the workplace.6

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