

Other Responses and comments on the HSL provisional report and HSL's reply

The first thing which struck us was the emphasis in your paper and in the University survey, on the importance of a number of factors which affected the reliability of the measurements. These included such matters as the temperature in the rooms; whether there was disturbance in the vicinity; what height the measurements were taken at/above floor level; and so on. This seemed to contrast with the methods adopted by Casella, where many aspects of their system were unclear. We wondered whether you had had the chance to talk to the Casella surveyors to clarify these issues.

Reply: We did not talk to the Casella surveyors. We were content that their report formed a reasonable basis for an assessment of exposure to mercury. Our discussion of the factors that affect the relationship between a contaminant and exposure was intended to illustrate the fact that we had considered the variables that are involved and considered that none had changed to the extent that they invalidated the Casella report as a basis for further consideration. This is summarised in the penultimate paragraph of 2.5, Conclusions.

The second set of questions arose from consideration of the University's 2008/9 survey. We noticed that on p 6 they mentioned that they had not found any concentration in a breathing zone which exceeded 25ug/m³; and yet, on p 7 they had recorded a concentration of 25.7ug/m³ for the breathing zone in room 2.057 (2.62) on 7 January 2009. We were wondering whether you had taken into account any part of this report?

Reply At that time HSL was working with the University to assess exposure to mercury. The values in the University's report are not inconsistent. The Workplace exposure limit is a time weighted average over 8 hours. The value of 25.7 µg/m³ was found in the morning only and values in the afternoon were lower so that the average over 8hour would be less than 25.

We noticed that in your report you state: (para 2.4, p 40) - 'Before 2004 there is no reference to the removal of mercury from Coupland 1. None of the documents discussing waste indicate the presence of (or the removal of) mercury before March 2007...the floors in the building were probably substantially in as-built condition at the time of the Casella 2004 survey, so air movement patterns probably had not changed much over the preceding decades.'

We set these statements alongside the sentence on p 8 of the University's 2008/9 survey, which ends: - '...pending further investigation into why 2001 remediation appears to have failed in (rooms 2.62 and 2.63)'. We wondered whether you were aware of any remediation work relating to mercury in Rutherford in 2001; and, if not, whether it was possible that such work could affect your report. We have an order form relating to removal of mercury from rooms 2.62 and 2.63, dated 12 February 2001; but this may not cover the full extent of the work undertaken.

Reply: Thank you for the copy of the purchase order for removal of mercury in 2001. We have asked the University if they have any more information about this and whether any work was carried out but as yet we have no further information. Our review of exposure to mercury is based on the documents made available to us from the University. In the light of the uncertainties we have modified our report slightly on page 31 para 2.2.3 after 'air movements etc we have added: [There is some](#)

uncertainty about whether any mercury was removed from Coupland 1 before 2004. A copy of a purchase order for removal of radioactive contamination and mercury, dated February 2001, refers to rooms 2.62 and 2.63. However we have no evidence that any mercury was actually removed but we do have a subsequent disposal declaration that explicitly states “special waste not present” (Churcher et al p252). Mercury has been recognised as hazardous and thus “special waste” from the earliest days of regulatory controls on waste disposal and so, if present, should have been declared. In addition, Churcher describes seeing mercury in 2.63 in 2002 where the floorboards had been removed (ibid appendix B5, p108) but comments that when he visited in February 2003 it had not been removed. The Department of Psychology had vacated the building in December 1999. ***We have added a new section 2.3.6 University of Manchester Purchase order dated 12/02/2001***

Since the provisional version of this report was published a copy of a purchase order has been found. It required NNC Ltd to “remove contamination from radiation and mercury (sic) Rooms 2.62 and 2.63 Coupland 1 building.” However a slightly later declaration of the nature of waste for disposal from Coupland 1 (Churcher et al 2008) explicitly states “no hazardous materials, or Special wastes present.” It may therefore be surmised that no mercury was removed during this work.

On page 40 para 2.4 has been rephrased - Before 2004 there is no certainty that any mercury was removed from Coupland 1. None of the documents available to us discussing waste indicate the presence of (or the removal of) mercury before March 2007....

Likewise, we compared the statements quoted above with the details of various works carried out in the building in the decades between its construction and the 2004 survey. For example, in the 1960's refurbishment work to Rutherford Building was approved at a cost of £121,267.8s.3d, a sum equivalent to over one and a half million pounds in today's values. At this cost, it seems likely to have included structural work.

Reply: This seems likely but we have no further details.

We also wondered what information you had had about the mercury decontamination which was presumably carried out as a result of the Casella report. We were puzzled at your reference to only having documents relating to waste removal of mercury in March 2007. Did you not have any other documents predating March 2007?

Reply: The documents we had are listed in table 8.