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Dear Jean,

Further to my visit to Gloucester on July 12 and 13, 2004, please find enclosed a short summary report

Best wishes,

Mark J Nieuwenhuijsen PhD

Mark Nieuwenhuijsen – Exposure assessment summary report

Incident Summary

A fire began at the Cleaning Services Group chemical waste transfer site and treatment facility at 02.00 on Monday 30th October 2000. Over 100 tonnes of mixed chemicals were ignited. A plume of smoke from the fire was observed to be driven by the high south westerly winds in a predominantly north easterly direction over the village of Sandhurst, Gloucestershire. Subsequently this was supported by plume modelling evidence from the Meteorological Office. Some local residents were evacuated but allowed to return to their properties in the evening when the fire had been controlled. The clean-up operation that followed was complicated by further leaks of chemicals and major flooding of the site and surrounding area from the River Severn. Fourteen households were evacuated again on Sunday 5th November because the 'Emergency Services' were concerned that in the event of a further fire access to the site might have proved impossible due to the extensive flooding.

Remit:

To review the work that was conducted on environmental modelling and monitoring
To assess how useful this work was for or as an exposure assessment and how it could be used for the long-term follow up study of residents in the area
To recommend any further work if needed

Visit

We conducted a site visit in the afternoon of July 12. We visited the site of the accident and the surrounding area

Access was provided to the files relating to the incident that are held by the PCT, in particular: The EA summary report which included data on environmental monitoring (but not the original reports on which it was based)

A report on air dispersion modelling conducted by Professor Roy Harrison

A report on hair sampling by Naomi Hammond and Alex Entwistle

Two reports on health studies in the area

Two reports to John Prescott

The protocol of the long-term follow up study

Furthermore, I requested access to:

Maps of the flooded area

Maps of the location of houses sampled

Report by the Food Standards Agency

However, none of these were available.

For the long-term follow up study, the population would need to be defined into 'exposed' and 'non-exposed' or some gradation of exposure. Based on the available evidence I suggested that the population that would be defined as exposed would consist of those identified by the air dispersion modelling as exposed to elevated levels. The maps produced in the air dispersion modelling grade the exposure levels according to colour, the areas that I recommend are categorised as exposed include those coloured blue, cyan, yellow and red.

The areas affected by the flood should be mapped and they should also be included in the exposed group. The rest of Gloucestershire would be defined as unexposed.

In the afternoon of July 13, a meeting was convened of the steering group of the Sandhurst chemical incident study. During the meeting I presented the above. The proposed study protocol of the long-term follow up study had identified seven parishes as exposed, and the rest of Gloucestershire as unexposed. There was considerable overlap between what I suggested as exposed areas and what was suggested in the protocol as exposed areas, although there were areas that were defined as exposed in one and not exposed in the other and vice versa. It was noted that for some areas outside the seven Parishes it would be difficult to identify names and addresses of the study population since the GP/Exeter files of 2000 have been destroyed. Furthermore, the community representative present provided some further areas as possibly exposed and noted that some people were evacuated while other were not.

After some discussion it was decided to include 2 scenarios in the follow up study. The exposed population would be defined by:

1 – Seven parishes, as in the original proposal

2 – A higher exposed area defined by the air dispersion modelling – categories cyan, yellow and red – for the first 16 hours

Movement of residents would be ignored since this would be difficult to establish. Populations identified by the original dispersion modelling outside the seven Parishes would not be defined as exposed because of the difficulties in identifying names and addresses. Unexposed populations will be selected from parishes in Gloucestershire that are similar to the parishes selected for the study in relation to for example socio-economic status. This will be decided at a further meeting.

Recommendations for further work:

None, how ever it may be useful to find out more about the hair sampling methodology, including if/how the hair was washed before analyses and the reliability of hair sampling results for the selected elements. If this is thought to be satisfactory, for a number of selected elements the hair sampling results could be summarised by village/parish to assess if there are any differences in concentrations in the hair, which may be related to the incident..