

Committee on the Medical Effects of Air Pollutants (COMEAP)

BUNCEFIELD FIRE: DECEMBER 11-14th, 2005

Background

1. COMEAP was asked to advise on the implications for health of any increases in general levels of air pollution resulting from the Buncefield Fire which occurred from December 11th to 14th 2005. This was an unusually large fire and led to the generation of a large plume of dark smoke. The heat of the fire led to the plume rising rapidly and dispersion was essentially limited to above the boundary layer of the atmosphere. This led to pollution at ground level, except close to the fire, being minimal. Monitoring in London, in the South East and in France, where some grounding of the plume had been predicted suggested that ground level concentrations of major air pollutants were not significantly raised by the incident though a peak in particle concentrations recorded at Horsham roadside monitoring site was attributed to this fire.

2. Professor Virginia Murray, her team and others from the Health Protection Agency (HPA) Chemical Hazards and Poisons Division (CHaPD) (London) provided health advice during the incident and in the post-incident phase. This advice was provided at the Gold (Strategic) Command level and led to local people being advised to stay indoors.

3. A detailed report on the effects of the incident on pollutant concentrations at ground level has been prepared for Defra by netcen¹ <http://www.defra.gov.uk/environment/airquality/buncefield/index.htm>. HPA (CHaPD, London) has contributed to this report. A report on health effects will be published by CHaPD in July this year. A larger study is also underway within the Health and Safety Executive (HSE) of those involved in dealing with the explosion and the fire.

4. On June 23rd, Professor Murray presented an account of the incident to Members. Her presentation was detailed and showed what an extraordinary incident had occurred.

5. Members were asked to advise on possible effects on health of pollutants dispersed at ground level. A draft of the netcen report was provided to Members.

6. Professor Murray also asked Members to advise on:

- post-incident epidemiological studies
- the need for electronic recording at Accident & Emergency departments to expedite such studies
- what might have been the implications for health had more extensive ground level pollution occurred

¹ Netcen: National Environmental Technology Centre at Harwell

COMEAP's Response

7. The immediate response to the incident.

- Members warmly welcomed Professor Murray's presentation and congratulated her and her team on their response to this exceptional incident. The work of many others dealing with the incident was praised.
- The Chairman expressed some surprise that he had not been consulted earlier on during the incident. This delay could have placed him and potentially other members of COMEAP in a less than ideal position for dealing with enquiries from the media.

8. The air pollution question

- Members noted the minimal effects on monitored concentrations of major air pollutants and concluded that few, if any, of the population would have been affected and such effects as may have occurred would have been minor. In reaching this view, Members deliberately excluded consideration of possible effects on those involved with dealing with the fire: this is a problem for experts in occupational health.
- Members agreed that the likely low chlorine content of the fuel meant that production of dioxins and similar compounds was not likely to have been significant and thus effects of such compounds on health should not be anticipated.

9. Epidemiological studies

- Members agreed that in the light of no significant changes in ground level concentrations of air pollutants it was unlikely that studies would detect effects of air pollutants released by the fire on health.
- Members agreed that any possible increases in attendances at Accident & Emergency departments and calls to NHS Direct should be examined in the light of normal day-to-day variations in these data, comparing data to control time periods and in control areas.

10. Implications for future incidents

- Members considered that further work could be done to optimise the equipment available for air pollutant sampling and the sampling protocols. Members agreed that it would be unlikely that epidemiological studies would be sufficiently powerful to detect adverse effects if these were to increase disease risks by only a few percentage points in relative terms. Thus the only value of epidemiology, if effects of this magnitude were predicted by risk assessment, would be to investigate whether that prediction was a

substantial underestimate – possibly necessary for public reassurance.

- Members recommended that advice to stay indoors be looked at in detail. It was noted that fine particles could pass from outdoors to indoors and it was recommended that thought be given to providing advice on how to reduce levels of ingress should outside particle concentrations be extremely high.
- Members considered the case for electronic recording of attendances at Accident and Emergency departments. It was felt that this case would have to be considered very carefully on its own merits, taking into account other issues in addition to the investigation of chemical incidents. Any satisfactory computerised system would have to be as comprehensive as the current hard copy records and this had not always been found to be the case in the past. Overall, Members did not wish to make specific recommendations on this point but accepted that good quality computerised record keeping might help.
- Members noted that rapid exploration of possible effects on health was needed during an incident such as the Buncefield Fire. It was argued that these should be seen as part of the emergency public health response to an incident and not as research studies requiring ethical approval. Members stressed that in an incident likely to cause health effects monitoring of health should not be allowed to wait for ethical approval. However, members also suggested that consideration should be given to the potential adverse effects of undertaking a survey on health effects when the pollutant levels were known to be no higher than usual. Such a judgement can be made in the light of initial data on pollutant levels.
- Members also suggested that should, in future, a similar event occur and that effects on health were deemed more likely on the basis of initial levels of pollution, that a clear indication should be obtained from an ethics committee on whether ethical approval would be needed for such a survey. It was the view of the committee that this was not necessary in the context of such an event and indeed might delay investigation to a time when memory and opinions would have changed in those surveyed. Such ethical advice should be sought now rather than at the time of any future event.
- Members advised that further thought be given to predicting the possible adverse effects on health of incidents leading to much higher ground level concentrations of air pollutants than those produced by the Buncefield Fire for example due to similar fires under different weather conditions or at different locations.
- Members advised that work to support those taking decisions regarding evacuation on the basis of pollutant concentrations

should be undertaken and brought back to the Committee. The Secretariat were asked to develop a way forward.

- Members noted that perfluorooctylsulphonate, a compound of the fire-fighting foam used, was a carcinogen and that it was being phased out. It was accepted that this was a compound of low volatility and was not, therefore, likely to cause an inhalation hazard. Members noted that monitoring of water from boreholes for this compound was being undertaken.

COMEAP Secretariat
September 2006