

Summary of the work of COMARE as published in its first six reports

The Committee on Medical Aspects of Radiation in the Environment (COMARE) was established in November 1985 in response to the final recommendation of the report of the Independent Advisory Group chaired by Sir Douglas Black (Black, 1984). Our terms of reference are to "assess and advise Government and the Devolved Authorities on the health effects of natural and man-made radiation in the environment and to assess the adequacy of the available data and the need for further research".

The Black Advisory Group had been commissioned by the Minister of Health in 1983 to investigate reports of a high incidence of leukaemia occurring in young people living in the village of Seascale, 3 km from the Sellafield nuclear site and the suggestion that there might be an association between the leukaemia incidence and the radioactive discharges from Sellafield. The Advisory Group confirmed that there was a higher incidence of leukaemia in young people resident in the area but also concluded that the estimated radiation dose from the Sellafield discharges and other sources, received by the local population, could not account for the observed leukaemia incidence on the basis of knowledge available at that time. The uncertainties in the available data led the Advisory Group to make recommendations for further research and investigation.

Our First Report (COMARE, 1986), examined the implications of some further information concerning discharges of uranium oxide particles from Sellafield in the 1950s, which had not been available to the Black Advisory Group. The Committee concluded that this additional information did not change the essential conclusions of the Black report.

Our Second Report investigated the incidence of leukaemia in young people living near to the Dounreay Nuclear Establishment in Caithness, Scotland (COMARE, 1988). We found evidence of an increased incidence of leukaemia in young people in the area and although the conventional dose and risk estimates suggested that radioactive discharges could not be responsible, we noted that the raised incidence of leukaemia at both Sellafield and Dounreay tended to support the hypothesis that some feature of these two plants led to an increased risk of leukaemia in young people living in the surrounding area. The report also considered other possible explanations and recommended further investigations.

Our Third Report considered suggestions of an increased incidence of childhood cancer near the Atomic Weapons Research Establishment at Aldermaston and the Royal Ordnance Factory at Burghfield (COMARE, 1989). We found a small but statistically significant increase in registration rates of childhood leukaemia and other childhood cancers in children in the vicinity of the two sites. However, we judged that the doses from the radioactive discharges were far too low to account for the observed increase in the incidence of childhood cancer. We considered a number of possible explanations for the findings including other mechanisms by which radiation could be involved, but there was insufficient evidence to point to any one explanation, although the possibility remained that a combination of factors might be involved. Further investigations were recommended. Our Third Report concluded by saying that the distribution of cases of childhood leukaemia or other childhood cancers around nuclear installations could not be seen in proper context in the absence of comparable information about the pattern throughout the UK. We recommended, therefore, that further work be carried out to determine the national

geographical pattern of distribution of childhood cancer and that this work should be given high priority.

Our Fourth Report was the result of the Committee's review of the dosimetric, epidemiological and other scientific data relating to the Sellafield Site and the village of Seascale, together with other relevant advances in scientific knowledge, that had become available since the publication of the report of the Black Advisory Group in 1984. In the report we concluded that there was good evidence for a continuing, significantly elevated level of all malignancies in young people (0-24) in Seascale throughout the period considered by the Black report (1963-83) and our subsequent analysis (1984-92), covering a total period of three decades. We considered the current estimate of the radiation doses to the Seascale population, from both routine and accidental discharges from Sellafield, to be too small to account for the observed excess of cases of leukaemia and NHL on the basis of current knowledge. We considered a number of other hypotheses involving radiation exposure and also those involving exposures to chemicals and infectious agents, either singly or in combination. We concluded that no single factor could account for the excess of leukaemia and NHL but that a mechanism involving infection may be a significant factor affecting the risk of leukaemia and NHL in young people in Seascale. We made five recommendations for further research, all of which were accepted by Government.

Our Fifth Report examined whether there is, or has been any unusual incidence of cancer in the vicinity of the former Greenham Common Airbase and whether there is or has been any association with local levels of radioactivity in the area. With regard to childhood cancer we have examined the local incidence of these diseases in the context of the geographical distribution of these malignancies nationwide. We have found nothing to suggest that a nuclear weapon was involved in the accident or subsequent fire that took place on 28 February 1958. In overall terms the environmental monitoring data, indicated that the levels of man-made and natural radionuclides in this area are low when compared with many other areas of the UK. We also concluded that the environmental monitoring undertaken in the past and currently is consistent with Aldermaston discharges. The finding of an excess of leukaemia in children aged 0-4 in the West Berkshire area in the current study confirms the excess observed in the studies described in our Third report. We also noted the excess of leukaemia in young people aged 0-24 in ward 2 in Newbury, but there was no significant increases of cancer in this age group in the other wards in and around Newbury. We have concluded that the levels of radiation in the local area are so low that they could not be responsible for the local incidence of childhood leukaemia. We have pointed out other factors which might explain the noted excess of childhood leukaemia, particularly those which may be associated with the social class structure of the local area. We hope to examine this further when the results of the geographical studies recommended in our Third report are complete. Part of the reason for undertaking the work in our Fifth Report was to examine the possibility that the environmental monitoring data in previously classified reports, might have had some effect on the conclusions of our Third Report. These data were not made available to us at the time. In the event, this has not altered the overall conclusions of our Third report. Nevertheless, we have expressed our concern that the failure of organisations to make available information about relevant activities constrains our ability to comply with our remit. As a result of this particular incident mechanisms have been developed whereby, should issues arise in the future where a high security classification is deemed still to be appropriate, classified information may be made available to appropriate committee members.

In our Sixth Report we summarised the work undertaken since 1995 and up until October 1998, to locate the source of the radioactive particles found in the general environment around the Dounreay Nuclear Establishment and reconsider the possible health implications of encountering these particles. We have also considered whether ingestion of these particles could be associated with the previously reported excess of leukaemia and NHL in young people living in Thurso. We noted that if individuals were to ingest particles with activities at the top of the range of those particles already found on the Dounreay foreshore, very serious acute radiation effects would occur. However, at that time very few particles had been found on the publicly accessible beach at Sandside Bay and all were of them were of low activity. We concluded that an implausibly large number of these particles would have needed to be ingested to have given rise to the known level of childhood leukaemia in the area around Dounreay. We recommended increased and regular and improved beach monitoring in the area to ensure any particles coming ashore could be found and removed.