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To
 AFQ Inspectors,
 SG Specialist Inspectors (Radiation),
 SG Medical Inspectors,
 SG Occupational Hygiene Inspectors
 Railway Inspectors
 HID Inspectors

EXTREMELY LOW FREQUENCY ELECTROMAGNETIC FIELDS AND THE RISK OF CANCER

REPORT OF AN ADVISORY GROUP ON NON-IONISING RADIATION

This OM draws attention to the publication of a report by the National Radiological Protection Board's (NRPB) Advisory Group on non-ionising radiation. It summarises the conclusions of the report, explains the current position and provides guidance on Inspectors' action.

Background

1 In 1992, the NRPB published the first report¹ of its Advisory Group, chaired by Sir Richard Doll that reviewed the scientific evidence on non-ionising electromagnetic fields and radiation and risk of cancer. The report concluded that the evidence for carcinogenicity was too weak to recommend changing existing guidelines on limiting exposure and could only be regarded as sufficient to justify further research.

2 Since that initial report, more research findings have been published and major reviews of the literature undertaken by other prominent bodies. In response to this, the Advisory Group has undertaken a comprehensive review of the experimental and epidemiological studies on exposure to extremely low frequency (ELF) electromagnetic fields (EMFs) (including the electrical power frequency, 50 Hz) and the risk of cancer. The report² was published last year and is concerned solely with low frequency radiation - high frequency (radio frequency, RF) radiation is not considered.

3 Considerable publicity is still given to reports of a variety of adverse health effects caused by EMFs and radiation at levels much lower than those in current guidelines on exposures likely to create a possible risk to health. The publicity includes alleged ill-health effects linked to exposure to low frequency radiation from 50 Hz power line transmission systems.

Current position

4 The report provides a comprehensive, critical and rational evaluation of the scientific literature by an expert group containing eminent epidemiologists.

5 The main conclusions of the report are:

'Laboratory experiments have provided no good evidence that extremely low frequency electromagnetic fields are capable of producing cancer, nor do human epidemiological studies suggest that they cause cancer in general. There is however, some epidemiological evidence that prolonged exposure to higher levels of power frequency magnetic fields is associated with a small risk of leukaemia in children. In practice, such levels of exposure are seldom encountered by the general public in the UK. In the absence of clear evidence of a carcinogenic effect in adults, or of a plausible explanation from experiments on animals or isolated cells, the epidemiological evidence is currently not strong enough to justify a firm conclusion that such fields cause leukaemia in children. Unless however, further research indicates that the finding is due to chance or some currently unrecognised artefact, the possibility remains that intense and prolonged exposures to magnetic fields can increase the risk of leukaemia in children'.

In relation to adults who are occupationally exposed, the report indicates that a causal relationship between EMF exposure and tumour incidence at any site is not established.

6 As part of its response to the report, the NRPB said that the findings provide no additional scientific evidence to require a change in exposure guidelines.

Action by inspectors

7 Where assessments of exposure to NIEMR are required, NRPB's existing guidelines³ should continue to be used.

Further information

8 A copy of the report's conclusions and recommendations will be issued to file 497. A copy of the report is also available in Magdalen Information Centre, Bootle.

References

¹ Electromagnetic fields and the risk of cancer. Report of an Advisory Group on Non-Ionising Radiation. Documents of the NRPB. Vol 3, No 1, 1992. HMSO, £10, ISBN 0-85951-346-7.

² ELF Electromagnetic fields and the risk of cancer. Documents of the NRPB. Vol 12, No 1, 2001. ISBN 0-85951-456-0.

³ Board statement on restrictions on human exposure to static and time varying electromagnetic fields and radiation. Documents of the NRPB. Vol 4, No 5, 1993.

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