

THE STEWART REPORT

There are additional factors that need to be taken into account in assessing any possible health effects. Populations as a whole are not genetically homogeneous and people can vary in their susceptibility to environmental hazards. There are well-established examples in the literature of the genetic predisposition of some groups, which could influence sensitivity to disease. There could also be a dependence on age. We conclude therefore that it is not possible at present to say that exposure to RF radiation, even at levels below national guidelines, is totally without potential adverse health effects, and that the gaps in knowledge are sufficient to justify a precautionary approach (Chapter 5, paragraphs 6.35–6.42)

1.20 In the light of the above considerations we recommend that a precautionary approach to the use of mobile phone technologies be adopted until much more detailed and scientifically robust information on any health effects becomes available

1.21 We note that a precautionary approach, in itself, is not without cost (paragraph 6.16) but we consider it to be an essential approach at this early stage in our understanding of mobile phone technology and its potential to impact on biological systems and on human health.

1.24 We recommend that national and local government, industry and the consumer should all become actively involved in addressing concerns about possible health effects of mobile phones (paragraph 6.40).

1.29 We recommend that a register of occupationally exposed workers be established and that cancer risks and mortality be examined to determine whether there are any harmful effects. If any Advice to Government adverse effects of exposure to RF radiation are identified then the Health and Safety Executive should establish a system of health surveillance (paragraph 5.240)

1.37 We recommend that, at national Government level, a template of protocols be developed, in concert with industry and consumers, which can be used to inform the planning process and which must be assiduously and openly followed before permission is given for the siting of a new base station (paragraphs 6.58–6.62). We consider the protocol should cover the following issues.

- All telecommunications network operators must notify the local authority of the proposed installation of base stations. This should cover installations for macrocells, microcells and picocells.
- The local authority should maintain an up-to-date list of all such notifications, which should be readily available for public consultation.

Summary and Recommendations

- The operator should provide to the local authority a statement for each site indicating its location, the height of the antenna, the frequency and modulation characteristics, and details of power output.
- Any change to an existing base station which increases its size, or the overall power radiated, should be subject to the normal planning process as if it were a new development.

1.38 We recommend that a robust planning template be set in place within 12 months of the publication of this report. It should incorporate a requirement for public involvement, an input by health authorities/health boards and a clear and open system of documentation which can be readily inspected by the general public (paragraphs 6.55–6.62).

1.39 We recommend that a national database be set up by Government giving details of all base stations and their emissions. This should include the characteristics of the base stations as described in paragraphs 6.47 and 6.48 and should be an essential part of the licence application for the site.

1.40 We recommend that an independent random, ongoing, audit of all base stations be carried out to ensure that exposure guidelines are not exceeded outside the marked exclusion zone and that the base stations comply with their agreed specifications. If base station emissions are found to exceed guideline levels, or if there is significant departure from the stated characteristics, then the base station should be decommissioned until compliance is demonstrated (paragraphs 6.53 and 6.54).

1.41 We recommend that particular attention should be paid initially to the auditing of base stations near to schools and other sensitive sites (paragraphs 6.54 and 6.63–6.68).

1.42 We recommend, in relation to macrocell base stations sited within school grounds that the beam of greatest intensity (paragraphs 4.32–4.35 and 6.63–6.68) should not fall on any part of the school grounds or buildings without agreement from the school and parents. Similar considerations should apply to macrocell base stations sited near to school grounds.

1.43 We recommend that in making decisions about the siting of base stations, planning authorities should have the power to ensure that the RF fields to which the public will be exposed will be kept to the lowest practical levels that will be commensurate with the telecommunications system operating effectively (paragraphs 6.55–6.62).

1.53 If there are currently unrecognised adverse health effects from the use of mobile phones, children may be more vulnerable because of their developing nervous system, the greater absorption of energy in the tissues of the head (paragraph 4.37), and a longer lifetime of exposure. In line with our precautionary approach, at this time, we believe that the widespread use of mobile phones by children for non-essential calls should be discouraged. We also recommend that the mobile phone industry should refrain from promoting the use of mobile phones by children (paragraphs 6.89 and 6.90).

1.56 In relation to present research findings, the following three areas deserve particular comment.

- First, the balance of the evidence available does not suggest that RF radiation from mobile phones or base stations causes cancer or other disease. However, there is now evidence that effects on biological functions, including those of the brain, may be induced by RF radiation at levels comparable to those associated with the use of mobile phones. There is, as yet, no evidence that these biological effects constitute a health hazard but at present only limited data are available. This is one reason why we recommend a precautionary approach.
- Second, concerns have been expressed that the pulsed nature of the signals from mobile phones and masts may have an impact on brain function. This is an intriguing possibility, which deserves further

research, particularly if pulsed signals continue to be used in the third generation of phones and related technologies. Research should concentrate on signal modulations representative of present and future phone technology

1.58 We recommend that a substantial research programme should operate under the aegis of a demonstrably independent panel. The aim should be to develop a programme of research related to health aspects of mobile phones and associated technologies. This should complement work sponsored by the EU and in other countries. In developing a research agenda the peer reviewed scientific literature, non-peer reviewed papers and anecdotal evidence should be taken into account (paragraphs 5.270–5.272).

Public Information and Consumer Choice

1.61 We are concerned at the variability and the limited extent of the information made available to consumers on mobile phone products. We recommend that Government circulates a leaflet to every household in the UK providing clearly understandable information on mobile phone technology and on related health aspects, including the use of mobile phones while driving (paragraphs 5.201–5.208). This leaflet should additionally be available at the point of sale. The leaflet should be developed in concert with industry, which has already produced some good leaflets (paragraphs 3.48 and 3.49).

1.62 We recommend that an Ombudsman be appointed to provide a focus for decisions on the siting of base stations when agreement cannot be reached locally, and on other relevant issues 1 65 (paragraphs 3.50 and 3.51). We recommend that Government sets in place a national system which enables independent testing of shielding devices and hands-free kits to be carried out, and which enables clear information to be given about the effectiveness of such devices. A kite mark or Summary and Recommendations equivalent should be introduced to demonstrate conformity with the testing standard. we recommend that NRPB gives greater priority to the execution of a more open approach to issues of public concern such as mobile phone technology and that it is proactive rather than reactive in its approach (paragraph 3.44).

1.68 We recommend that public concerns about risk be addressed by NRPB in a more sensitive and informative manner (paragraph 3.45).

1.69 We recommend that NRPB makes more use of specialist time-limited ad-hoc committees of experts and lay representatives to bring forward broadly based well-considered advice (paragraph 3.42).

1.70 We recommend that in a rapidly emerging field such as mobile phone technology where there is little peer-reviewed evidence on which to base advice, the totality of the information available, including non-peer-reviewed data and anecdotal evidence, be taken into account when advice is proffered (paragraph 3.46).

1.71 We note the paucity of resources available at NRPB for work on non-ionising radiation, including

work on mobile phones, and related research on life sciences. We recommend that work on non-ionising radiation and related life sciences work be strengthened at NRPB

PUBLIC CONCERNS

3.7 The health problems most commonly attributed to the use of mobile phone handsets were impairment of short-term memory, headaches, brain tumours, other cancers, sleep disturbance, depression and tiredness. We note that many of the people who attended the public meetings that we organised expressed dissatisfaction with the advice given by NRPB. Their view was that operators should respond to suggestions of adverse health effects even if the evidence was not conclusive, whereas NRPB advises that current exposure guidelines should not be altered until there is “convincing and consistent” evidence of adverse biological effects at lower levels.

6.16 The precautionary approach is not all or none in nature. Rather, it is a matter of degree. In essence, it requires that before accepting a new development we should have positive evidence that any risks from it are acceptably low, and not simply an absence of convincing evidence that risks are unacceptably high. However, individuals will differ in the strength of evidence that they need before concluding that risks are sufficiently small. The implementation of a precautionary approach carries costs, which may be direct, e.g. for better engineering, or from a delay in the benefits that the new technology will bring. Important indirect costs may also arise if resources are directed away from a more serious risk to deal with another risk that is in fact very minor. The aim, therefore, must be to follow a policy that is acceptable to most people, and which

minimises the chance of adverse outcomes without unnecessarily stifling progress.

6.20 Having reviewed all relevant epidemiological studies, NRPB concluded that the results were inconclusive and did not provide an adequate starting point from which to derive exposure guidelines. ICNIRP considered that there was no firm evidence for any effects that would impair health at lower levels of exposure to RF radiation. Instead, therefore, the guidelines were based on the potential of RF radiation to cause illness or injury through heating of body tissues. While some research had suggested that adverse health effects might occur from exposures lower than those needed to produce significant heating, the evidence for this was not considered sufficiently robust to form a basis for the derivation of exposure guidelines.

ICNIRP considered that there was no firm evidence for any effects that would impair health at lower levels of exposure to RF radiation. The balance of evidence to date suggests that exposures to RF radiation below NRPB and ICNIRP guidelines do not cause adverse health effects to the general population.

6.38 There is now scientific evidence, however, which suggests that there may be biological effects occurring at exposures below these guidelines. This does not necessarily mean that these effects lead to disease (paragraph 5.266).

6.39 We conclude therefore that it is not possible at present to say that exposure to RF radiation, even at levels below national guidelines, is totally without potential adverse health effects, and that the gaps in knowledge are sufficient to justify a precautionary approach.

6.40 In the light of the above considerations we recommend that a precautionary approach to the use of mobile phone technologies be adopted until much more detailed and scientifically robust information on any health effects becomes available. **We further recommend that national and local government, industry and the consumer should all become actively involved in addressing concerns about possible health effects of mobile phones.**

6.41 On its own, adoption of the ICNIRP exposure guidelines will not allow fully for the current gaps in scientific knowledge, and particularly the possibility of, as yet, unrecognised thermal or non-thermal adverse effects at lower levels of exposure. One way in which this uncertainty could be taken into account would be to apply a higher assessment factor in the derivation of the exposure guidelines. This would have the merit of simplicity. However, as yet, there is no satisfactory scientific basis on which to set the size of any increase.

6.42 An alternative would be to adopt the exposure guidelines recommended by ICNIRP, and in addition have a policy that requires best engineering practice for equipment and installations that ensures that fields are kept to the lowest levels commensurate with the telecommunications system operating effectively. We believe that this approach is preferable. We next consider how it might be applied in relation to the design and siting of base stations and the design, marketing and use of mobile phones.

6.44 We believe this approach is not optimal since it does not allow adequately for the uncertainties in scientific knowledge. Although it seems highly unlikely that the low levels of RF radiation from base stations would have significant, direct adverse effects on health, the possibility of harm from exposures insufficient to cause important heating of tissues cannot yet be ruled out with confidence. **Furthermore, the anxieties that some people feel when this uncertainty is ignored can in themselves affect their well-being**

6.48 We recommend that a national database be set up by Government giving details of all base stations and their emissions. For each this should list: the name of the operating company; the grid reference; the height of the antenna above ground level; the date that transmission started; the frequency range and signal characteristics of transmission; the transmitter power; and the maximum power output under the Wireless Telegraphy Act. Moreover, this information should be readily accessible by the public, and held in such a form that it would be easy to identify, for example, all base stations within a defined geographical area, and all belonging to a specified operator.

6.54 We recommend that an independent, random, ongoing audit of all base stations be carried out to ensure that exposure guidelines are not exceeded outside the marked exclusion zone and that the base stations comply with their agreed specifications. If base station emissions Precautionary Approach are found to exceed guideline levels, or there is significant departure from the stated characteristics, then the base station should be decommissioned until compliance is demonstrated. We recommend that

particular attention should be paid initially to the auditing of base stations near to schools and other sensitive sites.

6.57 We recommend that for all base stations, including those with masts under 15 m, permitted development rights should be revoked, and that the siting of all new base stations should be subject to the normal planning process. This planning process should also apply when a change to an existing base station will increase its power output.

6.58 We recommend that, at national Government level, a template of protocols be developed, in concert with industry and consumers, which can be used to inform the planning process and which must be assiduously and openly followed before permission is given for the siting of a base station.

6.61 We recommend that in making decisions about the siting of base stations, planning authorities should have power to ensure that the RF fields to which the public will be exposed will be kept to the lowest practical levels that will be commensurate with the telecommunications system operating effectively

6.67 We suggest that the responsibility for monitoring the requirements of paragraphs 6.65 and 6.66 should be given to local authorities with advice from the agency responsible for maintaining the database. Disputes could be referred to the Ombudsman (see paragraph 3.51).

6.68 We recommend, in relation to macrocell base stations sited within school grounds that the beam of greatest RF intensity should not fall on any part of the school grounds or buildings without agreement from the school and parents. Similar considerations should apply to macrocell base stations sited near to school grounds.

6.90 If there are currently unrecognised adverse health effects from the use of mobile phones, children may be more vulnerable because of their developing nervous system, the greater absorption of energy in the tissues of the head (paragraph 4.37), and a longer lifetime of exposure. In line with our precautionary approach, we believe that the widespread use of mobile phones by children for non-essential calls should be discouraged. We also recommend that the mobile phone industry should refrain from promoting the use of mobile phones by children.