Radiation Research Trust
September 8th & 9th 2008

"The Stewart Report – then, now and the foreseeable future"

Sir William Stewart
Chairman, Health Protection Agency

"The intensity of a conviction that a hypothesis is true has no bearing on whether it is true or false"

Sir Peter Medawer, (1979)
Advice to a young scientist

I would like to thank the Radiation Research Trust for inviting me to contribute to this meeting. I thank, in particular, Eileen O'Connor and Mike Bell, who made it clear to me at the outset, that the aim of the meeting was to have a rational evidence-based debate where all sides would have an opportunity to input their views. I applaud that concept and that is why I agreed to give this introductory talk. There is ongoing debate about whether RF radiation associated with mobile phones causes, or is likely to cause, adverse health effects. To me the issue is not yet clear cut and I have come to listen to the various contributions, and to learn.

Ten years ago, Government decided that an independent expert Group should be established to examine possible effects on health of mobile phones, base stations and transmitters. It was a milestone report because it was driven by public demand. As I said in my foreword to the Report, there was "probably no other technology in recent times which has been so quickly and widely adopted by the general public". In April 2000 there were about 25 million mobile phones in circulation in the UK. Today in the UK there are 70 million mobile phone subscriptions and according to OFCOM, mobile calls are set to outnumber fixed calls within 12 -18 months. Globally the numbers in circulation have escalated.

The membership of that Group included three of the speakers here today: Professor David Coggon, Dr Mike Repacholi, and myself. Every member of the Group signed up to the following:

- *The balance of evidence to date suggests that exposure to RF radiation below NRPB and ICNIRP guidelines do not cause adverse health effects to the general population.*

.

- *There is now scientific evidence, however, which suggests that there may be biological effects occurring at exposures below these guidelines. This does necessarily mean that these effects*

lead to disease or injury, but it is potentially important information.

- *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 gaps in knowledge are sufficient to justify a precautionary approach.*
- *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*

The above conclusions were carefully crafted and emphasise the uncertainty that existed in 2000.

THE LAST DECADE

Since the Stewart Report was published, a plethora of new papers, reports and views have become available. It is worth mentioning these under 4 main headings. Throughout the ages views and perceptions have had to change as a result of new findings, new observations and new analyses.

National studies. There have been a series of national studies set in place and reported upon, for example from the Netherlands, Germany, France and the UK. In the UK, the £8.8 million Mobile Telephones and Health Research Programme (MTHR1), set up in 2001 and jointly funded by the Government and Industry, supported 28 research projects. Over that period two case controlled studies of brain cancers and acoustic neuromas found no association with the incidence of mobile phone use for less than 10 years, with the results being less clear for people who used the phone for more than 10 years A second MTHR programme (MTHR2) has recently been announced. There has been criticism of the fact that the MTHR programme was partly funded by industry, but as chair of the programme when decisions on MTHR1 were assessed, I can assure everyone that, whilst supported by industry, the decisions on what should be funded were taken by an independent group after peer review in which industry was not involved.

International programmes There are the various international programmes such as the Interphone study which link together national studies. It deserves comment that more than two years after the end of the Interphone study some of the findings have not yet been published. That needs explanation. There are also important individual papers, reports and observations from across the world, including evidence from Sweden, for example, of an

increase in benign acoustic neuromas. However what is clear is that in the detailed studies published to date, no proven adverse risk to health has yet been unequivocally established, although some such studies have been criticised, and many questions remain, including the important fact that some cancers can take more than 10 years to develop and mobile phones have not been widely used for much longer. Remember smoking and lung cancer.

New compilations There have been important collections and compilations of papers which have focussed on perceived adverse health effects, in particular the recent BioInitiative Report and others to be discussed at this conference.

Pressure groups Outputs from pressure groups concerned about possible adverse effects of RF radiation have increased substantially over the past decade and have become increasingly professional in promoting their views. The Radiation Research Trust, the organisers of this meeting, is a good example, but there are others represented here today and it is important to fully discuss their evidence at this meeting.

What is clear from all of these inputs, from the web, and from the media who in the UK do a pretty balanced job, is that there is ongoing debate and controversy about the impact and/or potential impact of mobile phone technologies on health. There is a need to develop a way forward based on scientific knowledge and risk analyses. If not, we'll be here for another 20 or more years still arguing the toss. We need a consensual approach.

A CONSENSUAL WAY FORWARD?

I believe that some of the issues that need consideration include the following:
First, as a general way forward, let us accept there is a need to get away from the polarity of views which currently persists and seek to better understand the existing knowledge base and the reasons for differing views.

Second, to help resolve uncertainty, the fundamental need is a stronger underpinning knowledge base. Particularly, there needs to be a much stronger, well-funded science base with individuals, organisations and centres being well equipped nationally, and for more complementary international programmes to be set in place. The EU in Europe and the WHO must continue to proactively promote international studies. Support for the science base must come from both the public and private sectors. Guidelines cannot be secure unless there is a strong encompassing knowledge base upon which to build.

Third, attention has to be given to the existing international guidelines on NIR, and RF in particular. The guidelines followed in the UK are those of ICNIRP (International Commission on Non-Ionizing Radiation Protection), the "formally recognized non-governmental organization for NIR (non-ionizing radiation) protection for the World Health Organization (WHO), the International Labour Organization (ILO) and the European Union (EU)". In

the United States, Russia and China different guidance is in use. This meeting ought to discuss this issue and the possibility of harmonising the differing guidelines. But let me touch a little further on the ICNIRP guidelines seeing that we are in the UK. ICNIRP's operational mode is that it "continuously monitors and periodically carries out critical reviews of the scientific literature concerned with the physical characteristics and sources of NIR and possible biological and adverse health effects. In doing so ICNIRP limits its surveillance to published original scientific papers and reports that are generally available. ICNIRP performs such critical scientific analysis by evaluating the relevance and scientific quality of each report". Professor Vecchia, chair of ICNIRP will presumably amplify all this when he speaks on ICNIRP tomorrow.

ICNIRP's understandable dilemma, as I see it, is that when it produced its guidance, there was no sound evidence of adverse health effects caused by exposure to EMF. So it framed its guidance on the basis of heating effects only. Understandably using heating effects as the measured end-point, emissions from mobile phones and masts technology were unlikely to cause adverse health effects. However, the problem is that you cannot readily dismiss a condition because of lack of evidence as to why the condition exists, especially when people have symptoms which they attribute to mobile phone technology but not caused by heating----unless the effects are not caused by RF, and that is not proven. And what do you put in place of heating effects when NIR has no other clearly measured end-points. And, let's say you want to reduce the guideline levels, what do you reduce them to? The existing guidelines may be the best we have, but they have limitations.

Fourth, brings me back to the paucity of the knowledge base, and to the need for a stronger underpinning research base with, for example, a move beyond dosimetry alone, important though it has been, and is. Why don't we turn the question round and start with the people who express symptoms and seek scientific explanations for the symptoms. That is a difficult approach, because at this stage with mobile phone technology we have multiple perceived end points: sleeplessness, headaches, nausea etc. There are also multiple possible causes of such end-points. Such an approach may not resolve the issues overnight, but there is a chance to move part of the way forward and I believe, looking forward, that it is an important approach which requires much more research effort and priority.

For a start, we should get rid of two existing concepts. First, we should get away from the idea that if there is no mechanism to explain the observations then the observations have to be disregarded. There are numerous examples where initial observations without crucial scientific explanation have been hugely important. Take the London cholera epidemic of the 1800's when hundreds of people living particularly close to a water pump in Broad Street, in London, were dying from cholera. Dr John Snow, who lived nearby observed what was happening and surmised that the deaths were due to contaminated water from the pump. Although his view was dismissed by the Health Board and by the Water Company, and the cholera microbe

had not then been discovered, when the pump handle was removed from the pump in 1854 at Dr Snow's instigation, and the water thus became unavailable, the local epidemic quickly subsided. Think about it! Similarly take vitamin C and scurvy. Although vitamin C had not been discovered, it was recognised from observation, that sailors on long sea journeys developed scurvy and that this could be prevented by the provision of citrus fruit and vegetables in the diet.

We must also seek to get away from the often expressed assumption that everything that cannot be explained is due to psychological problems. From my perusal of the literature on mobile phones/masts, the peer reviewed hard evidence for the effect of mobile phone technology being due to psychological causes alone has scarcely been scratched. There is an urgent need for more work to be carried out in the social sciences area focusing on the individual, the community, the general public and on the societal impact.

Fifth, there are two other factors which should be addressed:
The first factor is that since 2000 there has been a mass of publications, reports, observations, and views purporting at the very least to implicate phones/base stations as a cause of adverse health effects. At a time of uncertainty when more information is required, non-peer reviewed articles should not be ignored. Doing so is ridiculous. They may be right but unproven and/or offer pointers to be thought about and followed up. Also, the fact that observations may not have been independently replicated under identical conditions can be eschewed as fair criticism but it would surely be wrong to dismiss such observations out of hand, especially when there is a general consistency of observation. What I am advocating is that, somehow, we should incorporate in to the analytical system fuller consideration of many of the observations noted and only having done that dismiss them or not. It is worse to do nothing
The second factor is that looking to the future there is the potentially huge impact that molecular biology/genetics may bring in explaining symptoms and effects and in helping to assess the risk of experiencing perceived and/or real adverse health effects. Epidemiological studies have played a major role in elucidating major effects, for example of smoking and lung cancer. But,10 – 40 years to elicit a cancer risk is a long time, especially when confounding factors may be in play. Equally conventional epidemiological studies cannot readily explain short term impacts on a small proportion of people, especially if there is no clearly defined and readily measurable end-point. We need to see, in the examination of possible NIR effects, whether there are specific genetic links involved. Studies on potential NIR effects need to become aligned to the world of genetic profiling, biomarkers and molecular epidemiology. Not easy, but with effort it should be achievable. One problem is that there are few specialists who can individually couple the physics and molecular genetics necessary in this area. But the way forward is to work as partners in jointly funded research programmes. The HPA is keen to develop this area.

Finally, ten years on, let's look at the known impact that mobile phone technology has had on the population as a whole.
What has changed over that period is that its major beneficial impact has been widely recognised, in the home, at work and at play. It is used to communicate information, threats, dangers, accidents etc. It is part of modern life. It has benefited business with the UK having an enviable mobile telephone communications industry. Our international competitiveness would be disadvantaged if it was unavailable and we would be globally less competitive. The benefits are huge and easily demonstrable. The technology is here for the foreseeable future.

What has not changed is the ongoing debate about whether mobile phone technology causes adverse effects on health. What is clear is that despite the increased number of phones in use, there is no evidence to date that the health of the general population is being adversely affected by mobile phone technology. Also peer reviewed papers to date, although not without critics, have almost entirely dismissed suggestions that radiation from mobile phone technologies cause adverse effects on health. There are one or two specific areas where there is conflicting scientific information available, for example, on acoustic neuromas and this needs to be followed up. This is important The main ongoing area of debate, as will be clear from this meeting, is whether there is a sound scientific basis for certain of the unexplained and/or as yet unproven assertions being made about RF radiation and its impact on health. It would be prudent not to dismiss these out of hand. We need a resilient expanded knowledge base to move such issues forward. In the interim, as a general principle, it would be sensible to continue to adopt a precautionary approach but, as the UK government has done, by sensibly tempering it with a proportionate response to meet social and economic needs. Personally, having done a risk/ benefit analysis, I continue to use my mobile phone when helpful and necessary, and shall continue to do so until I have stronger evidence of adverse health effects than exists at present.

The aim of this brief introduction is to stimulate debate. In doing so let me leave you with a point made in a New Scientist editorial of 30th November 1996. It said: "*Never argue with a fool in public -- people might not be able to tell the difference*"

oooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooooo