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A Guide to the SAGE First Interim Assessment

What is SAGE and who was part of it?

SAGE contains stakeholders from the whole spectrum of organisations. It was originally set up by the electricity industry, but industry deliberately put themselves in a minority so that this would be seen as a genuine stakeholder process rather than as an establishment fix.

List of SAGE participants: p54-56
Description of the process: p19-22

What is this “First Interim Assessment”?

SAGE is an ongoing dialogue. Rather than issuing a Report containing definite, agreed final conclusions, this is an Interim Assessment recording the discussions and the point they have reached. Not all stakeholders agree with everything. The Assessment has an integrity in being honest about differences rather than trying to cover them up.

Description of the status of the Assessment: coloured box on p2

The idea of SAGE is to provide input and advice to Government. SAGE Recommendations will only come about if Government decide to adopt them.

What happens next, p22

What does it say about the science?

Everyone is agreed that there is evidence suggesting a possible link between EMFs and childhood leukaemia. Most organisations – the Health Protection Agency, the World Health Organisation, the EU – agree it is only childhood leukaemia where the evidence warrants consideration of precautionary measures. But – a sign of its inclusiveness – the Assessment records the alternative view that EMFs may cause a whole range of diseases.

Agreed view of the science on childhood leukaemia: p14
View of science of other diseases from official bodies: p15 left hand column
Alternative view of science from California: p15 right-hand column

What does it say about the sources of EMFs?

Most attention gets focussed on power lines. But this Assessment also considers EMFs from house wiring, which potentially affect the whole population rather than just the people living near power lines – and concludes there is real scope for reducing EMFs from house wiring.

What does it say about house wiring?

SAGE identifies a package of simple changes that could be made to house wiring. These would be easy to implement when new homes are built or rewired and would be cheap – £20 per home. Because this package is both cheap and effective, SAGE recommends it should be implemented without worrying too much about the strength of the science or cost-benefit analysis.

Wiring in homes: p36 – p40
The package of recommended changes: green box on p39

What does it say the options are for power lines?

This Assessment analyses every conceivable option for reducing EMFs from high-voltage power lines. Most it dismisses very quickly. It ends up with two recommendations which were agreed by pretty well all the participants but are quite minor and wouldn't make a big difference. And, beyond these, an option: corridors along power lines which some participants favoured and some did not, which is why it is not a Recommendation.

List of options considered: p44

The two agreed Recommendations: green boxes on p45 and p46

Detailed description of corridors option: mainly p48, extending into p49-50

What does it say about the “corridor” option for power lines?

We could reduce exposures by stopping building homes near power lines. This is not a trivial thing to do. It involves sterilising land, compensation payments, devaluation of existing homes, and disruption to house-building programmes. The Assessment calculates the costs. Perhaps £2bn. And also calculates that if EMFs do in fact cause childhood leukaemia, this option might eventually prevent less than one extra case per year.

Description of consequences of this option: bullet points on p50-51

Pretty well all SAGE participants appear to agree that where there are sensible, reasonable precautionary options, we should take them. The issue is whether this option is a reasonable response to the uncertain science. Some SAGE participants think that, however much we'd like to err on the safe side, the burden to society of introducing corridors is disproportionate. Other participants think we should do it anyway.

Alternative conclusions about this option: parallel columns on p53

This option relates to stopping building any further homes near power lines. SAGE concludes this is the best place to start; dealing with existing homes is even more difficult.

Recommendation on existing homes: green box on p53

Are there any other similar recommendations we can compare this to?

SAGE discusses the WHO draft Precautionary Framework. This concludes on EMFs: Even after fully allowing for the legitimate desire by society to err on the safe side, it seems likely that only very low-cost measures will be justified.

Analysis of WHO Precautionary Framework: p34-p35

Some helpful quotes from the SAGE First Interim Assessment

This Assessment represents a record and a distillation of the discussions that have taken place within SAGE. It is not a single definitive set of universally agreed conclusions and recommendations, but rather captures the point our evolving discussions have reached. We are aware of places where particular issues need further consideration, and intend to progress our work. Merely by having participated in the process, no stakeholder is thereby bound to agree with every statement in the Assessment, or deemed to agree with every recommendation, or constrained by the contents of the Assessment in their future activities. [P2]

Around the world, most review bodies with an official status seem to have adopted the WHO/HPA view, and in particular, in the UK the HPA itself has a statutory role in providing advice. [P13]

[The scientific evidence on childhood leukaemia has led] NRPB (now HPA-RPD) to state *"The government should consider the need for further precautionary measures in respect of exposure of people to EMFs. In doing so, it should note that the overall evidence for adverse effects of EMFs on health at levels of exposure normally experienced by the general public is weak. The least weak evidence is for the exposure of children to power frequency magnetic fields and childhood leukaemia."* [P14 . this is the official recommendation from the NRPB which led to the existence of SAGE]

We wish to stress that our task has been to consider possible precautionary measures. By discussing what to do if EMFs caused certain health effects, we are not making any comment on how likely or unlikely it is that EMFs actually do cause those effects, and this Assessment should not be interpreted in that way. [P16]

However, most of the decisions that have to be made fall to Government, and Government have the responsibility to make their own decisions, both about the principles of precaution involved and about any action to be taken. We reach conclusions, and because we believe those conclusions are soundly based we have an expectation that Government will take them seriously. But where changes to regulation or policy are involved, we recognise that Government will need to perform a Regulatory Impact Assessment (RIA) and go through a formal process of public consultation. [P22]

We have adopted a principle of seeking ways to make people's exposure to electric and magnetic fields *"as low as reasonably achievable."* We use this phrase in its plain English sense rather than as a legally defined principle. Much of our work has been in determining what is reasonable. [P24]

We recognise that cost-benefit analysis is an important tool for society in determining the most effective use of resources, and in ensuring that society does not devote so much resource to one issue that it results in more harm in other areas than the benefit it creates. It is a way of assessing the proportionality of any response to a health or safety issue. [P27]

[WHO's] main conclusions (including some relevant to the lower distribution voltages, which SAGE has not yet considered) under the heading *"Option Selection"* are: *"Even after fully allowing for the legitimate desire by society to err on the safe side, it seems likely that only very low-cost measures will be justified"* .. [P34]

[on the recommendations for house wiring]

Therefore, we do not have a clear justification for this package of options in health cost-benefit terms. However, in view of the small absolute cost per home, particularly when seen in the context of the total cost of building a new home, and the fact that there is a trend for some of these options to happen anyway for other reasons, we nonetheless recommend that this package of options should be implemented. [P39]

[on domestic electrical appliances]

Equipment manufacturers should investigate whether fields could be reduced at low cost, and whether offering consumer choice of low-field appliances could be an advantageous marketing strategy [P42]

[on power lines]

As a result of our analysis, we have identified two options which we believe should be implemented anyway, which we describe here. However, these two options will not make a dramatic difference to exposures, and therefore we also identify and give some detail on the best available option for obtaining significant reduction in exposures [P45]

Firstly, we recommend that more information be provided to members of the public about exposures and the actions they could take themselves to reduce exposures if they wished. [P45]

we recommend that electricity companies be encouraged to choose the optimal phasing (usually transposed phasing) for all new lines, and also be encouraged to convert existing lines where possible and justifiable . we do not advocate a rigorous definition of what should be done, nor do we believe it should be enshrined in regulation or should have a specific timescale attached. Instead, we consider this will be most effective if expressed as a general encouragement to electricity companies to take the desired action where possible. [P46]

Beyond our two recommendations, we urge Government to make a clear decision either to implement or not to implement one of the variants of this option [a physical separation of buildings from power lines]. We have not identified any realistic alternative choices. [P46]

If magnetic fields are a cause of childhood leukaemia (and on the basis of our other assumptions including our estimate of likely future building that would be prevented) this [the %corridors+option] would, in the fullness of time, prevent perhaps from one-half to one extra case per year of childhood leukaemia in the UK. ⌘ Any benefit would occur progressively over future decades rather than all occurring at once, reflecting the timescales of the future building programme that would be prevented. [P50]

We have also analysed the consequences of this option in detail⌘

A strip of land around power lines is removed from the pool of available land for residential development ⌘ [in some areas] it would probably prevent present plans for homebuilding⌘

Land within the specified distance, where currently there is an expectation of being able to develop, would lose value. Where the power line crosses part of that land, the landowner would receive compensation from the electricity company for the whole loss of value, and this cost would probably ultimately be paid by electricity consumers. ⌘ We estimate that the total loss of land value nationally could be in the region of £1-2bn.

The desirability of existing homes close to power lines (within the corridor and perhaps slightly further) would probably be reduced, resulting in some homes losing value. ⌘ Estimates of the possible loss of value nationally range from almost nothing up to £2bn or more. ⌘ . All this would probably also cause considerable distress and anxiety for some people living in these homes.

It would become more expensive and would probably take longer to build new power lines when they are required, with greater recourse to compulsory powers being necessary. [P50]

The %WHO/HPA+view identifies childhood leukaemia as the only adverse health effect where the evidence is strong enough to be the basis for considering precautionary measures. In this view, the evidence for other adverse health effects is seen as too weak to use to justify precautionary measures with significant costs. In addition, this view of the science is seen by some stakeholders as having a particular status by virtue of being held by HPA, the body charged by Act of Parliament with advising the UK Government, and by WHO, which has a similar status internationally. On this basis, the costs of the option outweigh the benefits by a factor of at least 20, and this is likely to remain the case even allowing for the uncertainties in the calculation. It is recognised that cost-benefit considerations are not the only relevant factor but they are seen as key to optimising the use of resources in public health, and the margin of the disparity is large. The advice to Government from following this %WHO/HPA+view would therefore be to tend not to favour implementing the %corridors for new build+option. [P53]

Taking action on existing situations (with the exception of limited rephasing of 132 kV overhead lines as already discussed) would be more complex and more expensive and we suggest that the initial decision Government should make is whether or not to take action in relation to new construction. [P53]