

NON-IONISING RADIATION: EXPERIENCE OF COMMUNICATING THE HAZARDS

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ABSTRACT

Scientific advice relating to non-ionising radiation protection, partly through necessity, contains a degree of scientific terminology. The advice has to be directed at a variety of audiences including users and members of the public, many of whom may not be familiar with scientific terminology. This paper presents NRPB's practical experience of effectively conveying this advice to the various audiences.

INTRODUCTION

The study of human interactions with non-ionising radiation and the determination of any deleterious health effects which may arise as a result of this interaction is complex, involving scientists from a wide variety of disciplines. In such a multi-disciplinary scientific environment the language used to communicate ideas and express opinions must, through necessity, be technically precise and rigorous. It is perhaps to be expected that when such a community concludes its work, reaches a considered opinion and proposes its views as best current scientific advice, the advice is phrased in the same language. Here lies a basic problem. If communication, whether written or verbal is to be effective it must be understood by its audience; and specialist scientists form but a small part of the overall audience.

The National Radiological Protection Board is responsible for the provision of advice to Government Departments of the United Kingdom, to corporate bodies and to members of the British general public in relation to protection against the hazards of both ionising and non-ionising radiation and it is with this large audience that the Board must communicate. Resources are finite and must be used in the most effective manner. This requires the various audiences and their needs to be clearly identified. The Government is perhaps the focus for the Board's formal advice on standards, but this paper focuses on three audience groupings; the radiological protection community; the general public and the users (employers and employees), principally the latter group. A number of approaches will be explored as will the interaction between these audiences.

RADIOLOGICAL PROTECTION PROFESSIONALS

Radiological protection professionals are in the best position to receive advice from the Board in its formal advice format. The Documents of the NRPB is the current route by which the Board promulgates its formal advice on non-ionising radiations (1-3). These publications are supported by the NRPB Report and Memorandum series where the research results are more extensive, and by peer-reviewed scientific papers in the open literature. These and various specific meetings provide the mainstream, of communication for those at the forefront of non-ionising radiation work. However, account also has to be taken of the radiological protection professionals whose background and training has focused on ionising radiations and who have had their area of expertise extended either by design or evolution to include non-ionising radiations.

Training can be a very effective form of communication, whether by directly training the individual or by training the trainers. The Board offers two professional-level training courses: the Advanced Radiological Protection (ARP) course aimed at the seasoned radiation safety professional, and the Post Graduate Radiological Protection (PGRP) course aimed at meeting the early training requirements of those embarking upon a career in radiation protection. Board staff, and invited speakers, communicate directly with the radiological protection community, influencing current thinking, promoting consistency and the development of a common approach in addressing radiological protection matters. Whilst still dominated by ionising radiation matters, the non-ionising radiation content is increasingly important.

The Board also provides a series of scientific seminars and produces a monthly Radiological Protection Bulletin, in which non-ionising radiation topics figure prominently.

GENERAL PUBLIC

Before looking at what may appear to be the next logical group, the users, it is necessary to first consider the general public. This is because the users, ie the employers and employees, are of course also members of the general public and will often reflect the generally held perceptions.

The public receive most of their information about non-ionising radiation and its potential health effects from the media. The information will be acquired by the media from press releases, high profile activities arising from litigious matters and from published scientific reports and papers. Again we come back to the basic problem that the source material is in a highly technical form and needs to be translated into plain language that allows the public to relate the potential hazards to their own experience. This process may be helped through press releases and briefings, and by providing radio, television and press interviews. This can be resource intensive, but it is necessary in order to provide a careful blend of scientifically accurate information and summaries in plain language. How this is used is another matter; the media has its own priorities that sometimes lead to selective presentation of information, sometimes producing a skewed or alarmist view of things. Nevertheless there are many balanced and thoughtful articles and programmes. Wishing away the bad bits is unproductive: we simply have to recognise realities and continue to influence the media in as honest a way as possible.

With non-ionising radiation issues we have the advantage of being able to learn from the pitfalls encountered previously in the ionising radiation field. However there is also the very large disadvantage of the word "radiation" and the pre-conception in the public's mind that this is automatically associated with cancers. Often the message to be communicated is that the possible health effects are different and that the hazards are significantly lower than the public's perception. However one can have equal difficulties getting over the message that common practices are more hazardous than generally accepted. A recent example has been the Board's advice on ultraviolet radiation (3) and the hazards associated with direct exposure to the sun and to sunbeds. This is perhaps not a message that many in the general public want to hear, as it directly affects their lifestyles, but it is an important matter and one that will be a challenge to our communication skills over a number of years.

The Board has put a lot of effort into another communication medium, namely a series of "At-a-Glance" leaflets. These are aimed at the interested layperson and are produced in both graphical and pictorial form utilising colour to enhance the visual impact. Relevant information, statistics and facts are presented in bullet point style. Each leaflet covers a particular subject area, for example Radon, Nuclear Emergencies, Medical Radiation, Transport of Radioactive Materials, Natural Radiation, Non-ionising Radiation, Ultraviolet Radiation and Electric and Magnetic Fields from the Use of Electricity. The At-a-Glance series has proved to be very successful with over one million copies distributed to date.

The Board receives a steady stream of telephone calls and letters from members of the public and following media coverage of non-ionising radiation matters this increases. Many enquiries can be dealt with by a package of information including reprints from the Board's journal, the Radiological Protection Bulletin and the At-a-Glance series. However, many questions require further input from scientific staff. Whilst there is clearly a need for a national body to be in a position to answer such questions in this way, it is resource intensive and that is one of the reasons for focusing effort on the more cost effective routes of media communication and leaflets.

THE USERS

Whilst there are some documents available that give specific guidance to users of non-ionising radiation, these are not as extensive as those for ionising radiation, partly due to the developing nature of the subject and partly due to the lack of hazard specific legislation. It is perhaps an area for improving communication in the future.

One area that has developed significantly over the past couple of years is the range of training courses available to communicate at this level. These have to be focused, both on the audience, eg safety professional, management, staff etc; and on the specific use of non-ionising radiation. The latter vary considerably: for example, from the localised nature of manufacturing uses of RF, such as heat sealing of PVC, to the communications industry where RF radiation is radiated from antennas; and for lasers from simple low power laser pointers through medical laser scalpels to fully interlocked high powered lasers. The direct needs of safety professionals are often easily addressed in straightforward lectures, however at the other end of the scale many trainees will not have been in a classroom environment since leaving school. For the latter group the use of good visual representations and practical demonstrations and measurements are essential. They can also be very useful to the safety professional in suggesting ways they may pass on understanding to a wider audience.

To address these needs the Board runs a range of training courses and has also collaborated with Loughborough University in developing laser safety training that addresses not just the radiation hazard but others such as electrical and fume hazards.

Many practical situations require measurements of non-ionising radiations as part of an overall assessment, whilst others are standard situations that have been previously well documented. Even in the latter case, measurements of non-ionising radiations as part of consultancy work may be necessary to allay fears of the workforce. For example in recent years concerns have been expressed in some quarters over the exposure to electromagnetic fields from visual display units (VDUs). Although the scientific evidence suggests that employees will not be harmed by these fields (4), enquiries are still received by the Board. Copies of publications and telephone reassurance may be sufficient to reassure some employees. However, in some cases this may not be sufficient and an employer may be in the situation where a number of employees are refusing to work at VDUs, or wishes to confirm that there is nothing wrong with a particular VDU. Under these circumstances it may be necessary to visit the premises to carry out measurements for reassurance purposes. These should confirm that the emissions from the VDUs are below the Board's investigation levels. However, if the results are presented in a written report, the employee and possibly the employer, may be overawed by the formal nature of the document. A more successful approach is to carry out a series of measurements with the concerned employees and trade union representatives present. They can be asked to read the meters on the measurement instrumentation (with care to ensure they do not influence the measurement results) and compare these measurements with the investigation levels. Any questioning can then be in the small group or on a one-to-one basis. Most employees are trusting of professionals who are prepared to go through this very open and direct process.

CONCLUSIONS

As in other areas of safety the development of scientifically sound advice is just one component of developing radiation protection for non-ionising radiation: resources to effectively communicate that advice are essential. The means of communication and the level of delivery must take account of the various audiences. This is not a new message, but one we should routinely remind ourselves of.

REFERENCES

- 1 NRPB. Board Statement on Clinical Magnetic Resonance Diagnostic Procedures, Documents of NRPB, Vol 2, No 1, 1991, NRPB (Chilton).
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- 3 NRPB. Board Statement of Effects of Ultraviolet Radiation on Human Health, Documents of NRPB, Vol 6, No 2, 1995, NRPB (Chilton).
- 4 NRPB. Health Effects Related to the Use of Visual Display Units, Documents of NRPB, Vol 5, No 2, 1994, NRPB (Chilton).