
EUROPEAN PARLIAMENT

Working Documents

1980 - 1981

9 February 1981

DOCUMENT 1-838/80

Report

drawn up on behalf of the Committee on the Environment, Public Health and
Consumer Protection

**on the proposal from the Commission of the European Communities to
the Council (Doc. 1-323/80) for a directive laying down basic
standards for the health protection of workers and the general public
against the dangers of microwave radiation**

Rapporteur: Mr A. GHERGO

12.1

By letter of 8 July 1980, the President of the Council of the European Communities requested the European Parliament to deliver an opinion on the proposal for a directive laying down basic standards for the health protection of workers and the general public against the dangers of microwave radiation.

The President of the European Parliament referred this proposal to the Committee on the Environment, Public Health and Consumer Protection on 11 July 1980.

On 26 September 1980, the Committee on the Environment, Public Health and Consumer Protection appointed Mr Ghergo rapporteur.

The committee considered the proposal at its meetings of 27 January 1981 and adopted the draft report by 11 votes to 2 with 1 abstention.

Present: Mr Johnson, vice-chairman; Mr Alber, vice-chairman; Mr Ghergo, rapporteur; Mr Adam (deputizing for Mr O'Connell), Mr Ceravolo (deputizing for Mr Segré), Mr Combe, Mr Forth (deputizing for Sir Peter Vanneck), Mrs Fullet, Mrs Lentz-Cornette, Mr Muntingh, Mrs Roudy, Mrs Schleicher, Mr Sherlock, Mr Visas

C o n t e n t s

	<u>Page</u>
A. Motion for a resolution.....	5
B. Explanatory Statement.....	7
I. Introduction.....	7
II. General remarks.....	7
III. Conclusions.....	11

A

The Committee on the Environment, Public Health and Consumer Protection hereby submits to the European Parliament the following motion for a resolution together with explanatory statement:

MOTION FOR A RESOLUTION

embodying the opinion of the European Parliament on the proposal from the Commission of the European Communities to the Council for a directive laying down basic standards for the health protection of workers and the general public against the dangers of microwave radiation.

The European Parliament,

- having regard to the proposal from the Commission to the Council¹,
 - having been consulted by the Council (Doc. 1-323/80),
 - whereas protecting workers and the general public against hazards of harmful environmental factors is one of the fundamental objectives of the Community,
 - whereas there is a need to harmonize national legislation in this field, partly with the aim of removing obstacles which in practice obstruct the free movement of industrial goods between Member States,
 - whereas the causes of environmental pollution include sources of electromagnetic radiation, which are becoming more widespread all the time,
 - whereas the European Parliament, in its resolution on the Sixth General Report for 1972, adopted on 9 May 1973, called on the Commission to lay down basic safety standards for the protection of workers against the dangers of microwave radiation,
 - having regard to the report of the Committee on the Environment, Public Health and Consumer Protection (Doc. 1-838/80),
1. Approves the proposal for a directive laying down basic standards for the health protection of workers and the general public against the dangers of microwave radiation;
 2. Notes that, given the present state of the art, the limits proposed by the Commission can be accepted for the time being pending their revision, where necessary, within a period not exceeding two years;

¹ OJ No. C249, 26.9.1980, p.6

3. Fears that, given the present state of industrial medicine, the medical supervision referred to in Articles 4, 5 and 8 will pose problems in the Member States and therefore calls upon the Commission to pay particular attention to this point;
4. Calls on the Commission to put forward proposals to this end and to submit to Parliament within the same period a detailed report on the progress made in implementing the directive;
5. Urges the Commission furthermore to examine the possibility of launching a specific multi-annual research programme in this sector, similar to that undertaken on ionizing radiations;
6. Recommends that the Commission examine, as a matter of urgency, the problems relating to health protection against other non-ionizing electromagnetic radiations, especially radio waves and laser beams, which are already widely used and tending to become more widespread.

EXPLANATORY STATEMENTI. INTRODUCTION

1. One of the priority areas for Community action is that of the damage caused by the exposure of workers and the general public to environmental hazards: there is a greater need in this field than in others to harmonize the rules of the Member States in order to ensure uniform safety standards and to avoid a situation where differences in legislation between individual States are tantamount to an obstacle to the free movement of industrial goods.

2. With these arguments in mind, the Community has already adopted directives and recommendations intended to protect workers and the general public against the hazards posed by the industrial use of harmful substances.

3. At its sitting of 9 May 1973, the European Parliament adopted a resolution calling on the Commission to draw up standards for health protection against the dangers of microwave radiation.

4. Only now, after what can hardly be called a short interval, has the Commission presented to the Council a proposal for a directive in this field and it is on this proposal that Parliament is asked to give its opinion.

II. GENERAL REMARKS

5. The various Member States already have standards for the protection of the general public and workers exposed to certain risks of ionizing radiation, but there is complete lack of measures governing exposure to other forms of electromagnetic radiation and in particular against short waves (microwaves).

6. Within the spectrum of electromagnetic radiation, radiant energy is emitted in a variety of ways, each of which has specific applications: apart from ionizing radiations, there are also ultra-violet rays, visible light, infra-red rays, microwaves, radio waves and electric waves. A number of different units are used to measure electromagnetic radiation, of which the most common are wavelength, expressed in metres, frequency, expressed in Hertz (or cycles per second) and the quantity of energy emitted, in electron-volts.

7. Wavelength and frequency are in inverse proportion, in that low wavelengths correspond to high frequencies and vice-versa.

8. The number of oscillations per second is measured in Hertz and the most common multiples are kiloHertz (kHz), which is equal to 1000 Hertz, megaHertz (MHz), which is equal to one million Hertz, and the gigaHertz, which is equal to 1000 million Hertz.

9. 'Microwaves' are electromagnetic radiation within the frequency range 300 MHz to 300 GHz (i.e., between 300 million and 300,000 million Hertz) and in the radiation spectrum they occupy a position between infra-red rays and radio waves.

10. Microwaves have many applications, which can be broadly divided into military and civilian; the latter can be further subdivided into industrial uses, applications in the telecommunications sector, household applications and medicine.

11. Industrial applications include microwave generators used primarily to bond wood and plastics, to dry paper and textiles, to sterilize and pasteurize pre-packed foods and destroy the insects which attack tobacco, cereals, etc.

12. In telecommunications, apart from radar in its military and civilian applications (aircraft, ships etc.), the uses include radio links via satellite, radio-astronomy, radio-meteorology and certain high-power TV transmitters.

13. A household application gaining in popularity, especially in the USA, is the use of microwave oven for cooking foodstuffs. These appliances are also used in the commercial catering business.

14. Finally, radar waves have long been used by doctors to treat arthritis and other osteoarticular diseases. The treatment uses microwaves to increase the deep body temperature (diathermy).

15. It is not only people who use microwave-emitting apparatus at work but also the population at large, which may come into contact with microwaves for various reasons, who are exposed to the effects of this radiation.

16. In biological terms, exposure can result in lesions to the more sensitive organs and tissues such as the eyes, the nervous system, the cardiovascular system, the haemopoietic and immunological systems and the reproductive organs. The microwaves act on the molecules, inducing oscillation, transfer and rotation of the electrons and hence the generation of a certain amount of heat.

17. The most sensitive tissues are those with a high water content and few blood vessels in which the normal action of the blood in redistributing heat from an area exposed to a higher temperature to the rest of the body is reduced.

18. In the eyes cataracts (opaqueness of the crystalline lens) occur as well as inflammation and, apparently, also damage to the retina; in the case of the nervous system changes have been observed on the electro encephalograph and various clinical symptoms such as violent headaches, insomnia, irritability, etc.

19. Other disturbances occur in the cardiovascular system, as shown by changes in the electro-cardiogram, bradycardia or, the opposite, tachycardia, arrhythmia, etc.

20. In the case of the haemopoietic and immunological system, changes have been observed in the protein fractions of the plasma, increases in lymphocytis and leukocytes, etc.

21. The testicles are also particularly sensitive to the action of microwaves, which produce edema, swellings and necrosis of the seminiferous tubules with harmful effects on spermatogenesis; cases of sterility and foetal malformation have also been reported.

22. The damage to health caused by exposure to microwaves has been extensively studied both in experimental research and in epidemiological surveys carried out on personnel exposed to this form of radiation at work or for military purposes: a detailed review of these studies was published in 1975 under the auspices of the Advisory Group for Aerospace Research and Development, which operates under the aegis of NATO (AGARD L.S. No 78 on Radiation Hazards).

23. At present, at least in the countries of the Community, the harmful effects of microwaves have been observed primarily in subjects exposed to radiation at work (technicians and others employed at plants and generators, etc., workers in certain industries, medical staff). However, it is to be assumed that in the near future Europe will follow the pattern already established in the United States and Japan where appliances using microwaves are widely employed with the resultant spread of the risk of exposure to radiation to the population as a whole.

24. It is estimated, for example, that there are 10 million microwave ovens currently in use throughout the world. In Europe manufacturers are already producing this type of household appliance but in the current legislation of the various Community Member States there seem to be no standards regulating the sale of microwave ovens.

25. The greatest danger is posed by the diffusion into the environment of undesired radiation on such a scale that scientists and experts in this field have already begun to talk of 'electromagnetic pollution'.

26. This statement is undoubtedly justified when one considers that measurements made in various countries have shown that the ratio of the intensity of electromagnetic radiation in the environment generated by natural sources to that generated by human activities is of the order of $1:10^6$ or even $1:10^{12}$ (depending on the researchers and the geographical location).

27. In these circumstances, it is clear that correct design of the equipment, the provision, where necessary, of appropriate shields and the adoption of strict rules on the use of such equipment could substantially reduce the dangers of pollution.

28. The claim that, in Europe, at any rate, the hazards of microwaves are not yet significant is unacceptable: experience has shown that technological progress spreads very rapidly and that industrial products used in the United States and Japan are always widely sold in other countries.

29. Furthermore, we know that there must always be some interval of time between the adoption of a directive by the Council and its effective implementation in the Member States: in this case, perhaps for the first time, we have the chance to introduce safety standards before the harmful effects on the environment and public health become widespread.

30. Rules limiting the use of microwaves have already been in force in various countries for sometime; in the USA since 1965, in the USSR since 1958 (subsequently amended in 1961 and 1978), in Poland since 1972, in the Federal Republic of Germany since 1973 and in Sweden since 1977; furthermore, France, the United Kingdom, the Federal Republic of Germany, the Netherlands and Canada have rules laying down exposure limits similar to those adopted in the USA.

31. For the above reasons, the Commission's initiative in proposing a directive laying down Community standards for the health protection of workers and the general public against the dangers of microwaves should be wholeheartedly endorsed.

32. The rules laying down uniform exposure limits, checks and protective measures for workers in all the Member States should be approved; further standards are proposed for the production, use and maintenance of appliances which employ microwaves as well as the introduction of 'controlled areas' with appropriate warning signs (similar to what has been done in the case of ionizing radiation).

33. The problem of fixing limits for exposure to microwave radiation and hence of assessing the criteria adopted in the Commission's proposal for a directive is more complex.

34. In the present state of knowledge, it is difficult to adopt definitive criteria on exposure limits which would find large-scale acceptance: those proposed in the Commission document seem to be similar to the limits laid down in the relevant US legislation but are higher than those set in the USSR and other Eastern European countries.

35. The problem is made more difficult by the characteristics of the human body with its irregular surface and hence varying absorption rates of its different parts; in addition, some individuals are more sensitive than others, which makes it more difficult to adopt limits that can be applied to all those exposed to microwave radiation.

III - CONCLUSIONS

36. For these reasons, the limits proposed by the Commission can be accepted for the time being, with a recommendation that they be reviewed within a specific period (two years after adoption of the directive); the Commission should also undertake to present to Parliament within the same period a progress report on the implementation of the directive.

37. One specific aspect which should be considered in connection with the review of limits is the distinction to be drawn between workers and the general public, bearing in mind that exposure for the former is limited to the working day (generally 8 hours) while the latter suffers continuous exposure, 24 hours a day.

38. Another recommendation which should be made to the Commission concerns the need to launch a Community-sponsored specific research programme in this field similar to that for ionizing radiation.

39. Finally, the text of the motion for a resolution to be submitted to Parliament should urge the Commission to examine as soon as possible problems relating to health protection against other types of electromagnetic radiation, particularly radio waves and lasers for which radiation levels are already high and tending to increase substantially.