In 1978, the European Federation of Ultrasound in Medicine and Biology (EFSUMB) suggested that an expert advisory group for the safety of diagnostic ultrasound be set up. Dr. CR Hill, the former EFSUMB secretary, got the task of putting the group together.

The number of members was limited to eight. The overall purpose of the group was to provide informed guidance on safety to the membership of the Federation, and particularly to those with responsibility for clinical use of ultrasound. It was envisaged that the work of the group would be on the following lines:

— to assess existing documentation on safety, including in particular the review recently prepared by the World Health Organisation,
— to carry out a continuing review of the literature, particularly in relation to any new evidence that might modify existing conclusions and recommendations,
— to make reports to the membership on the state of the subject at such times and in such ways as seem appropriate.

It was suggested that the group should exist for five years in the first instance and it was thought essential that the group should meet at least once a year. Seven scientists from various countries and different fields of expertise convened one year later to the first meeting (see table I). They named themselves the European Committee for Ultrasonic Radiation Safety (“Watchdog Committee”). In 1989, an official bylaw reduced the membership to six with nomination for a three years period and possibility of reelection.

GROUP ACTIVITIES

Since 1979, the Watchdog Committee has met 22 times and developed a variety of activities.

<table>
<thead>
<tr>
<th>TABLE I. — Watchdog members 1979 to 1997.</th>
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<tr>
<td>Jens Bang, Obstetrician and Gynecologist in Copenhagen, Denmark 1979-1996</td>
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<td>Klaus Brendel, Physicist in Brunswig, Germany 1979-1993</td>
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<tr>
<td>Ivo Hrazdira, Biophysicist in Brno, Czech Republic 1979-1995</td>
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<tr>
<td>Vincenca Mazzeo, Ophthalmologist in Ferrara, Italy 1979-1986</td>
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<tr>
<td>Roy Williams, Biologist in Manchester, U.K. 1979-1995</td>
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<tr>
<td>David Serr, Obstetrician and Gynecologist in Tel Aviv, Israel 1980-1989</td>
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</tbody>
</table>

Present members

Philippe Arbeille, Physicist in Tours, France Since 1997
Ulrich Cobet, Biophysicist in Hall, Germany Since 1997
Hans-Dieter Rott¹, Human Geneticist in Erlangen, Germany 1979-1999
Kjell Salvesen, Obstetrician and Epidemiologist in Trondheim, Norvay 1995-2002

¹ Chairman.

Reviews

More than 160 publications have been considered for comment and more than 100 critical reviews were have been finalized. These reviews cover all safety relevant topics including physical and various
biological effects, measurement techniques and epidemiological studies. These reports have been published in EFSUMB Newsletter, European Journal of Ultrasound, and in German in Ultraschall in der Medizin and Ultraschall in Klinik und Praxis.

**Statements**

In 1984, on request of the EFSUMB Board, the Watchdogs prepared a safety statement which was on subsequent meetings repeatedly reconfirmed or changed according to new scientific information. A new statement was drafted in October 1996 and confirmed in April 1997 [1].

**Tutorials and guidelines**

The watchdogs felt that in sonographers and medical users there is insufficient knowledge of the basic physical and biological facts of ultrasound. Therefore, a series of tutorial articles was composed which are intended to give basic information for better clinical evaluations and a better understanding of scientific ultrasound safety literature. Ten tutorials have been published [2-11]. Additional tutorials on lung haemorrhage caused by diagnostic ultrasound, echocontrast agents, heating by ultrasound and others are in preparation. Moreover, two guidelines were written for the safe use of Doppler ultrasound in clinical use and extracorporeal shock-wave lithotripsy [11, 12].

**Congress contributions**

On various national and international congresses the Watchdog group organized safety sessions, e.g. on the last three EUROSON meetings in Helsinki (1978), Innsbruck (1993) and Budapest (1996), and in Tours (1998). Furthermore, the group contributed to several national meetings e.g. the Danish Safety Symposium in 1988 in Copenhagen, the Dreiländertreffen 1992 in Karlsruhe, Germany, and a BMUS Meeting in 1997 in London.

**International cooperations**

The Watchdog group is in liaison with the American Institute of Ultrasound in Medicine (AIUM) with mutual exchange of documents and invitations to safety meetings. Moreover, single watchdogs are members of the Safety Committee of the World Federation of Ultrasound in Medicine and Biology (WFUMB), and of the International Electrotechnical Commission (IEC) TC 87 which provides safety relevant standardisation of ultrasound devices.

**CONCLUDING REMARKS**

The vast majority of sonographic examinations are safe and do not imply any hazards. For some application, however, safety cannot be assumed under all clinical circumstances. As long as the scientific data base is insufficient for definitive statements, prudent use should restrict ultrasound exposure to the minimum necessary for an appropriate diagnosis. Pulsed Doppler and use of echocontrast are at present of special concern.

**REFERENCES**


**SUMMARY**

The European Committee for Ultrasound Radiation Safety (“Watchdogs”) is an interdisciplinary group of European scientists who are permanently engaged in monitoring safety issues of diagnostic ultrasound. The task of the Watchdog Group is to inform the European Federation of Ultrasound in Medicine and Biology (EFSUMB) about potential risks of ultrasound and to give advice for its appropriate diagnostic use. The group meets at least once a year. Its activities include literature reviews, preparation and circulation of a safety statement, publication of tutorial articles and guidelines and organisation of EFSUMB Congress safety sessions. The Watchdogs can be contacted through the EFSUMB office in London, or directly to any of the members, who are prepared to comment any questions related to ultrasound safety.

**Key-words:** Medical Ultrasound. Bioeffects. Safety.