decreased it in other cases. In one donor (number 24) there even was a statistically significant increase at a MMC dose of 0.05 μg/ml, but a significant decrease at 0.1 μg/ml was observed. We are therefore not able to draw any firm conclusion.

Moreover, due to several factors which can influence the frequency of sister chromatid exchanges (e.g., culture conditions) and according to the United Kingdom Environmental Mutagen Society (UKEMS) guidelines (UKEMS, 1990), at least a doubling in SCE frequency or an obvious dose-response relationship should be accepted as a positive response. In the light of this consideration we should conclude that the 455.7 MHz exposure does not influence the SCE frequency alone or in combination with MMC.

Possible synergisms were also investigated with X-rays. This was again done with the "metaphase test" (analysis of chromosome aberrations) as X-rays are well known to induce chromosome aberrations rather than SCE (Evans, 1977). Low doses of X-rays alone induce few chromosomal aberrations, which means that a large number of cells need to be analysed to observe any difference due to ionizing radiation. Therefore, pooled data may be most interesting (see Table 3), rather than individual data. Yet, we intentionally used low to moderate doses of X-rays, as the synergism might enhance the radiation response. Using the combined treatment it was not possible to increase the chromosome aberration frequency compared to X-rays alone. Therefore, the present investigation points to the absence of any synergistic effect between the 455.7 MHz microwaves and X-rays.

As a conclusion, in the present investigation it was not possible to demonstrate any effect of 455.7 MHz electromagnetic fields on the genetic material of white blood cells *in vitro*. However, it should be stressed that this study was performed in conditions where the exposure was not well characterized. Therefore, in the next step of investigation, well-controlled studies using well-characterized exposure parameters and SAR determinations should be carried out.

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