

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Proposal to reduce the carcinogenic character of electromagnetic radiation (EMR)** MARJORIE LUNDQUIST, The Bioelectromagnetic Hygiene Institute — Non-ionizing electromagnetic radiation (NIEMR) interacts with matter in 3 ways:<sup>1</sup> it can transfer energy, linear momentum, and angular momentum to matter. At high frequencies (*e.g.*, microwaves), evidence exists of a carcinogenic effect on living creatures irradiated with NIEMR.<sup>2</sup> Which effect is carcinogenic? NIEMR heats matter by transfer of energy; this effect is used to **kill** established cancers. Transfer of linear momentum to matter merely alters the local pressure; cancer has never been associated with pressure changes. So the transfer of non-zero angular momentum to matter is the interaction most likely to be carcinogenic. EMR polarization can be circular, elliptical, or plane. Only plane-polarized EMR possesses **zero** angular momentum and therefore **cannot** transfer any angular momentum to matter. Everything that is true of NIEMR is also true of ionizing EMR, so it seems likely that the carcinogenic potential of **all** EMR (whether ionizing or non-ionizing) will be minimized by filtering it or taking other steps to make it plane-polarized before using it to irradiate a person or animal. Obvious applications are medical/dental X-rays and the full body scanners used on travelers at airports.

<sup>1</sup>M. Lundquist, **BAPS 51(1):518** (2006).

<sup>2</sup>M. Lundquist, **BAPS 49(1):1296** (2004).

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Date submitted: 04 Jan 2011

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