

# PRELIMINARY OBSERVATION ON HUMAN TOTAL DNA EXPOSED TO VDTs RADIATIONS

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Previous studies have demonstrated that VDTs radiations induce nucleoprotein damages into cells exposed. In order to precize the molecular mechanisms involved, we have studied the VDTs effect on human total DNA by FIGE. We compared these results with those obtained following the exposition of the same material close to a mobile phase base station antenna

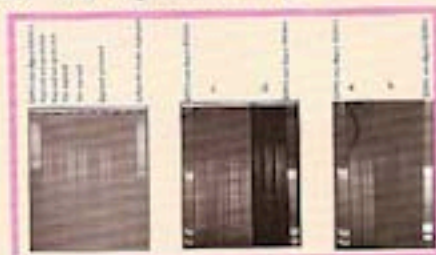
## MATERIAL AND METHODS.

Human Female Umbilical DNA<sup>®</sup> (SIGMA, 1 $\mu$ g) embedded with agarose into Eppenddorff<sup>®</sup> (GeneAmp) was exposed to VDTs (50 Hz alternating voltage of 220 V, electric field 13 V/M and magnetic fields 50 nT):

- 8 samples were exposed 24h at Room Temperature 20°C in dark
- 8 samples were left in the dark at RT as control
- 8 samples were exposed close to a VDT equipped by AMF-Bioshield<sup>®</sup>, an experimental protector

In comparison, we exposed 1 $\mu$ g Human Female Umbilical DNA close to a mobile phase base station antenna during 7 days :

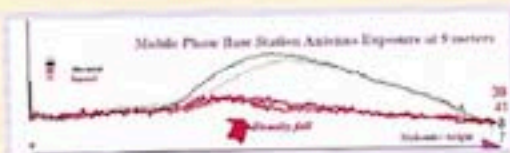
- a - 10 control exposed at 9 meters at 15°C in a Mu-metal tube
- b - 25 samples exposed at 9 meters at 15°C
- c - 15 control exposed at 40 meters at 17°C in a Mu-metal tube
- d - 25 samples exposed at 40 meters at 17°C



The agarose plugs were put on a gel electrophoresis to perform field inversion gel electrophoresis (FIGE). The Hoefer<sup>®</sup> PC 500 Switch Back Pulse Controlled was programmed for single phase runs (run 18 hours, reverse ratio 3/1, pulse time 0.1-0.7 s, 6.5 volts/cm). Gels were photographed under UV exposure.



Densitometric profile were performed on a McIntosh computer using public domain NIH Image Program (developed at the U.S. National Institutes of Health and available on th internet at <http://rsb.info.nih.gov/nih-image/>).



## RESULTS

All the VDTs unexposed and exposed samples had the same profile. In the case of all exposed DNA samples, there is a shift to lower molecular weight of the DNA smears (greater than 10 Kb).



All the mobile phase base station antenna exposed samples had the same profile : a fall of the quantity of high molecular weight DNA. The importance of the reduction in the molecular weight of the DNA is inversely proportional to the distance from the sample to the antenna.

## CONCLUSION

- 1 - the VDTs radiation could break DNA
- 2 - the experimental system EMF-Bioshield<sup>®</sup> could be able to ensure good preservation of the DNA exposed to the VDTs radiation
- 3 - the mobile phase base station antenna radiation could break close exposed DNA