

## APPENDIX C

## Glossary

- \* CATARACTOGENESIS - Process of forming vision obscuring opacities in the lens of the eye.
- CNS - Central Nervous System. Brain and spinal cord.
- \* CW - Continuous Wave. Mode of RF broadcast where a steady power level is maintained without modulation or interruption.
- \* DIATHERMY - Method of treating soft tissue trauma by generating heat directly in the tissue by absorption of appropriate frequency microwaves.
- \* DIELECTRIC - Medium having property of storing energy in an electric or magnetic field.
- \* DOSIMETRY - Process of measuring dose or energy absorption. For ionizing radiation dose is expressed in rads ( $1 \text{ rad} = 100 \text{ ergs-g}^{-1}$ ); while microwave "dose" is frequently expressed as specific energy absorption (SAR) in units of  $\text{watts-kg}^{-1}$ .
- \* E FIELD - Electric field associated with microwave exposure.
- ECOPARK - Controlled area where an undisturbed ecosystem can be studied or where effects of a potentially disruptive agent on an ecosystem can be studied on an otherwise unperturbed system.
- \* ENERGY DEPOSITION - Process by which energy of EM radiation is transferred to the medium through which it passes.
- EPIDEMIOLOGY - The field of science dealing with the relationship of the various factors which determine the frequencies and distributions of an infectious process, a disease, or a physiological state in a human community.
- IMMUNOLOGY - Department of biology which concerns itself with the study of immunity.

\* EXPOSURE SYSTEM, MICROWAVE - Apparatus in which a test system--animals, solutions, etc.-- can be exposed to NIR under closely controlled conditions.

1. Anechoic Chamber - Exposure system in which a beam of NIR is directed from a terminal horn of a waveguide into a small room lined with energy absorber which prevents reflected energy from reaching the test sample which is located in the main beam.

2. Cavity - Small chamber at end of waveguide into which RF energy is dumped. Poor definition of dosimetry. Has multimodal standing waves.

3. Circularly Polarized - Chamber with constant relationship between E and H fields to increase uniformity of exposure. Animal's position has much less effect on absorbed energy than in other types of systems.

4. Waveguide - Chamber that is part of the waveguide. RF field passes through the chamber with minimal perturbation.

GAMMA ( $\gamma$ ) RAY - Short wavelength electromagnetic radiation of nuclear origin (range of energy from 10 keV to 9 MeV) emitted from the nucleus.

\* HF - Part of RF spectrum extending from 3-30 MHz.

\* H-FIELD - Magnetic field associated with microwave exposure.

HEMATOPOIETIC - Pertaining to formation of cellular components of blood.

\* HETEROOTHERM - Animal that is capable of changing set point of body temperature regulation.

\* Hz - Hertz. Unit for frequency; expressed as  $\text{sec}^{-1}$  or cycles per second.

KHz - KiloHertz ( $10^3$  Hz); one thousand cycles per second.

MHz - MegaHertz ( $10^6$  Hz); one million cycles per second.

GHz - GigaHertz ( $10^9$  Hz); one billion cycles per second.

IMMUNOLOGY - Department of biology which concerns itself with the study of immunity.

IONIZING RADIATION - Electromagnetic or particulate radiation possessing sufficient energy to cause disassociation of orbital electrons from their parent molecules, thus forming ions.

KRYPTON-85 - Radioactive noble gas produced in nuclear reactors or explosions. Accounts for a large portion of the population dose commitment from the nuclear power industry whenever reactor fuel is being reprocessed.

LORAN-C - Long range navigation system using three separated transmitters and one receiver to establish location by determination of two range differences. Operates at ~100 KHz with range of 2,000 miles.

MHz - See Hz.

\* mW/cm<sup>2</sup> - MilliWatt per square centimeter. Power density (exposure) of 1/1000 of a Watt per square centimeter of exposed area.

\* NONIONIZING RADIATION - EM radiation that does not possess enough energy to disassociate molecules into ions.

OMEGA - Navigation system similar to LORAN. Operates at 3-30 KHz with global coverage by 6-8 ground stations.

PERM - Passive Environmental Radon Monitor. Uses TLD as active.

PLOWSHARE - Program that studied potential peaceful uses of nuclear explosives. Examples - digging canals, stimulating natural gas flow.

\* RADIOFREQUENCY RADIATION - EM radiation in frequency range of 10 KHz to 300 MHz.

RADIONUCLIDES - Radioactive isotopes of various elements as contrasted to the stable, non-radioactive isotopes of the same elements.

RADON - Usually refers to <sup>222</sup>Rn which is a radioactive noble gas prominent in the Uranium decay series. Radon is the immediate daughter of <sup>226</sup>Ra and diffuses out of the solid matrix (rock, building material, etc.) into the air where it and its daughters can be breathed. Respiratory exposure to Rn daughter is a major component of human

exposure to radionuclides. Another radon isotope,  $^{220}\text{Rn}$ , is usually called Thoron and is part of the Thorium series.

\* RF, RFR - See radiofrequency radiation.

RPISU - Radon Progeny Integrating Sampling Unit. Measures radon daughters using TLD as active element.

Rn - Chemical symbol for Radon.

TERATOLOGY - The division of embryology and pathology which deals with abnormal development and congenital malformations.

THERMOLUMINESCENT - Having property of emitting light, usually visible, when heated.

THERMOLUMINESCENT DOSIMETER (TLD) - A thermoluminescent material for which the amount of light emitted when heated is predictably proportional to its exposure to ionizing radiation and which is usable for assaying that exposure.

TRITIUM - Radioactive isotope of hydrogen,  $^1\text{H}^3$ , produced by nuclear fission or cosmic ray interactions. Significant waste product from the nuclear fuel cycle.

\* UHF - Ultra high frequency. Portion of RF spectrum from 470 MHz to 890 MHz.

X-RAY - Penetrating electromagnetic radiations whose wave lengths are shorter than visible light. They are usually produced by bombarding a metallic target with fast electrons in a high vacuum. In nuclear reactors, it is customary to refer to photons originating in the nucleus as gamma rays, and those originating in the extra-nuclear part of the atom as x-rays. These rays are sometimes called roentgen rays after their discoverer, W. C. Roentgen.