1. **Advantages, Disadvantages and Risks**

**4.1 NFC Advantages**

**4.2 NFC Disadvantages**

**4.3 Electro-Magnets Dangers**

The effects of electro-magnetic radiation upon biological systems, and too many other chemical systems as well, under standard conditions, depend upon the radiation's power and frequency. For electro-magnetic radiation of visible frequencies or lower, e.g. Radio frequency-modulated, microwave and IR, the damage done to cells and other materials is determined mainly by power and caused primarily by heating effects from the combined energy transfer of many photons. By contrast, for ultra-violet and higher frequencies, e.g. X-rays and gamma rays. Chemical materials and living cells can be further damaged by simple heating, since individual photons of such high frequency have enough energy to cause direct molecular damage. Photodissociation, photolysis, or photodecomposition is a chemical reaction in which a chemical compound is broken down by photons, it is the interaction of one or more photons with one target molecule, and it is not limited to visible light. Since a photon's energy is inversely proportional to its, electro-magnetic waves with the energy of visible light or higher, such as ultra-violet light, x-rays and gamma rays are usually involved in such reactions. ‎[11]‎[12]

**4.4 Magnetic Field Dangers**

Magnetic damping is a form of damping that occurs when a magnetic field moves through a conductor, or vice versa. When a magnetic field moves through a conductor an eddy current is induced in the conductor due to the magnet’s movement. The flow of electrons in the conductor creates an opposing magnetic field to the magnet which results in damping of the magnet and heat inside of the conductor, similar to heat buildup inside of power cords. The loss of energy used to heat up the conductor is equal to the loss of kinetic energy. Eddy currents induced in conductors are much stronger as temperatures approach cryogenic temperatures, for critical damping for cryogenic applications and testing in the aerospace industry. The differential equation of motion of a magnet dropped vertically through or near a conductor, where “”: magnet’s mass, “”: damping coefficient, “”: magnet’s velocity, “”: gravity and “”: acceleration of magnet or the conductor body

Even though magnets are mostly used for experimental research laboratories; they are used in aerodynamic stabilizing, education, industry, and some other military uses, e.g. the rail gun.