

University Policy: Static Magnetic Field Safety

Magnetic fields can be found near large magnets such as machines using magnetic resonance imaging (MRI's) and nuclear magnetic resonance (NMR's). The health effects of these magnets aren't fully understood. The main hazard is to those with pacemakers or metal implants in their body. The University of Massachusetts Lowell has set the most stringent standards to assure the health and safety to the university community.



1. Training

FOR SPECIFIC LAB INSTALLATIONS

- EHS Lab Safety Training is required (from EEM website)
 - PI directed awareness training which explains signage and limits
- ### 2. Hazard analysis conducted by Radiation Safety (initially, and then as necessary)
- Inventory and document of magnet (retain record)
 - Evaluate and document potential risks of magnet with gaussmeter and define field strength and delineate where hazardous conditions exist.
 - Implement signage/posting (see tables on following page for advice on when to post)
 - Check for room security
- ### 3. Radiation Safety can provide support, technical advice, and will be available for emergency response.

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Posting Requirements ¹

5 G (0.5mT)		Limit for those with pacemakers
10G (1.0mT)		Magnetic material such as credit cards, computer drives, and watches can be damaged
30G (3.0mT)		Kinetic energy hazard from small ferrous objects
600 G (60mT)		Allowed TWA for routine exposure (whole body) (8-hour TWA*)
6000 G (600mT)		Allowed TWA for routine exposure (extremities) (8-hour TWA*)
20,000 G (2T)		Whole body ceiling limit (no exposure allowed above this limit)
50,000 G (5T)		Extremity ceiling limit (no exposure allowed above this limit)
		* TWA exposure time is normally a concern only for extremely high field exposures to the whole body.

¹ Threshold Limit Values Handbook, ACGIH, 2008 Edition

Abbreviations:

G – Gauss; a unit of magnetic field intensity, equal to 0.0001 Tesla

mT – millitesla

T – Tesla; magnetic field strength is measured in Tesla

TWA – time weighted average

Note: 1 Gauss (G) = 0.1 millitesla (mT)