BROOKHAVEN NATIONAL LABORATORY

BNL Static Magnetic Fields Exposure Form

Part A: Source Hazard Assessment Record

I. Source Identification

Department: NSLS	Building: 725	Room or Area (location of source): U7A

Identifier/ Name of Source:

GMW Magnet Systems

Status of Source Usage (check all that apply):

[ ] In use on frequent basis [ ] Planned use in the near future [ ] Possible future use [ ] No planned use

[X] Intermittent use [ ] One-time use [ ] Other:

Check or Describe Use or Process:

- ☐ Accelerator magnets
- ☐ Beam transport magnet
- ☒ Detector magnets
- ☐ Super-conducting coils
- [ ] Other (specify):
- ☐ Nuclear Magnetic Resonance
- ☐ Magnetic Resonance Imaging
- ☐ Medical device
- ☐ Electron microscope
- ☐ Magnetometers
- ☐ Ion pumps
- ☐ Permanent magnet
- ☐ Electromagnet lifting device
- ☐ Tool Chuck/clamp

II. Exposure Summary [Complete Part B: Field Strength Measurement Record *or* attach documentation from manufacturer]

Target Body Area	BNL Exposure Limits**			
	TWA-8		Ceiling	
	(mT)	(G)	(mT)	(G)
Cardiac Pacemaker & Ferromagnetic Objects*			0.5	5
Whole Body (Torso or Head)	60	600	2,000 (2 T)	20,000
Extremities (Limbs)	600	6,000	5,000 (5 T)	50,000

*Ferromagnetic Objects (Ceiling), including medical implants and prostheses, may be affected by fields. Additional evaluation is required.

** TWA-8 = $(B_1 t_1 + B_2 t_2 + \ldots. + B_n t_n) / 480$ minutes (See Exhibit BNL Static Magnetic Field Exposure Limits for details.)

B = Flux Density [mT]

t = time of exposure [minutes]

Maximum Exposure Potential surveyed applicable to worker exposure (mT): 0.5 mT at 12" from magnet

III. Exposure Hazard Evaluation: Indicate worker exposure potential on the OMC Job Assessment Form or OMC Static Magnetic Field Questionnaire form.

Flux Density

1a. ☐ Flux Density ≥ 0.5 mT (5 Gauss). No potential for individuals with medical electronic devices or ferromagnetic implants/prostheses* to be exposed above 0.5 mT (5 Gauss).

1b. ☒ Flux Density ≥ 0.5 mT (5 Gauss). Access to > 5G for individuals with medical electronic devices or ferromagnetic implants/prostheses* is not permitted.

2a. ☐ Flux Density ≥ 60 mT (600 Gauss) - Whole Body. No potential to exceed the 8 hours TWA.

2b. ☐ Flux Density ≥ 60 mT (600 Gauss) - Whole body. Potential to exceed the 8 hours TWA. Controls must be used.

3a. ☐ Flux Density ≥ 600 mT (6000 Gauss) - Limbs. No potential to exceed the 8 hours TWA.

3b. ☐ Flux Density ≥ 600 mT (6000 Gauss) - Limbs. Potential to exceed the 8 hours TWA. Controls must be used.

4a. ☐ Flux Density ≥ 2T (ceiling) - Whole Body. No potential to exceed the BNL ceiling.

4b. ☐ Flux Density ≥ 2T (ceiling) - Whole Body. Potential to exceed the BNL ceiling. Controls must be used.

5a. ☐ Flux Density ≥ 5T (ceiling) - Limbs. No potential to exceed the BNL ceiling.

5b. ☐ Flux Density ≥ 5T (ceiling) - Limbs. Potential to exceed the BNL ceiling. Controls must be used.

* Medical electronic devices include cardiac pacemakers, electronic inner ear prostheses, and insulin pumps. Ferromagnetic implants/ prostheses include aneurysm clips, replacement hips.

4. **Describe job/task and potential for employee exposures** (e.g., type of work performed around source, method of control, time spent in fields [hours/day] and method of determining exposure):

Users may stand near the magnet during experiments. The area is configured so that whole body exposure > 0.5 mT is not likely.

5. **Frequency of exposure** (e.g., # days per year or month, # tests per year, in continuous use, etc.):

Exposure could be up to 12 hours/day for 2 weeks. Magnet is used at least 4 times/year

IV. Precautions / Engineering & Administrative Controls

Precautions During Use (check all that apply):

- ☒ Signs
- ☐ Lights
- ☐ Barriers
- ☐ Restricted access
- ☐ Rotation of workers
- ☐ Working when de-energized
- ☐ Use of nonferromagnetic tools
- ☐ Physical indicator of fringe fields (e.g., use of string with paper clips or equivalent)
- ☐ Other:

Written Documentation:

- ☐ Experimental Review (Work Planning and Control for Experiments and Operations Subject Area)
- ☐ Work Planning and Control (Work Planning and Control for Experiments and Operations Subject Area)
- ☐ Written SOP (describe):

Other kinds of workers who may require information/written documentation/training to enter this area:

Checklist:

Employee training:	☐ Static Magnetic Fields Web Course	☐ Dept/Division-Specific Training	
Supervisors training:	☐ Static Magnetic Fields Web Course	☐ Dept/Division-Specific Training	
Training required to be linked to Job Training Analysis for affected workers:		☐ yes	☐ no
Worker evaluation required by OMC (all workers exposed to ≥ 5G)		☒ yes	☐ no
		☐ yes	☐ no

V. Initial Assessment

Completed by: L. Stiegler & D. Fischer	**Date: 10/28/08**
Reviewed by ES&H Coordinator: L. Stiegler	**Date: 10/28/08**

Forward the original form to the Static Magnetic Fields Subject Matter Expert, copies to your ES&H Coordinator and Safety & Health Representative. Retain a copy in your files. Update and resubmit the assessment when changes occur.