

Brookhaven National Laboratory/ Photon Sciences Directorate				
Subject:	Safety System Work Permits			
Number:	PS-ESH-PRM-3.4.1	Revision:	1	Effective: 10/12/2011
				Page 1 of 5
Prepared By: T. McDonald	Approved By: R. Chmiel	Approved By: T. Shaftan	Approved By: E. Zitvogel	

*Approval signatures on file with master copy.

1.0 Introduction

Safety Systems at the Photon Sciences Directorate include Radiation Safety Systems and LASER Safety Systems. Radiation Safety systems at the Photon Sciences depend on shielding and interlock systems, while LASER safety systems rely on interlock systems. A configuration control program is utilized to ensure that these safety systems are in place and functioning to protect personnel. Any work which will move or modify any shielding or safety system must be reviewed and approved. The Photon Sciences Safety System Work Permit form is the basis for authorizing work on these systems and is intended to be used for any work affecting the accelerators, beam lines and/or LASERS. The Safety System Work Permit consists of three copies, white, yellow and pink. Details regarding distribution of these copies are provided in Section 4.4.

Everyone who does work on the experimental floors or in the machine areas must obey the restrictions on work affecting shielding or safety interlock systems. Anyone who initiates work that impacts a radiation or LASER interlock security system, or removes shielding, must obtain and post a Safety System Work Permit at the work site, and must ensure that any required safeguards have been put in place before starting the work. Anyone who joins a job in progress that involves moving shielding, modifying beam lines, or working on safety systems must verify the status of the Safety System Work Permit.

Most shielding is obvious: concrete, lead bricks, sheets of lead, and hutch walls. Configuration control can also include objects not as obvious, including: beam pipes, fences, monochromator tanks or sheets of borated polyethylene. Likewise, there are parts of the interlock systems that may not be obvious; for example the overhead lights in hutches and tunnels are connected to the interlock as part of the warning system. Because of the nature of the interlock system, the interlocks associated with beam lines and hutches that are not in service are usually still connected to the rest of the safety system. All of these components are maintained under the configuration control program, and a Safety System Work Permit must be approved before initiating work related to, or affecting, a safety system (including all personnel protection interlock work). If there is a doubt regarding this issue, personnel are required to get the necessary information before beginning the work.

The Safety System Work Permit (see [Attachment 1](#)) captures associated work being done on all Photon Sciences accelerators, beam lines and LASER safety systems. Safety System Work Permits issued for the NSLS accelerators are issued and tracked by the NSLS Control Room Operators. Safety System Work permits issued for NSLS beamlines and Laser systems are tracked by the Operations Coordinators. The SDL Operations Group control and track Safety System Work Permits at the SDL Facility. NSLS2 Safety System Work Permits are issued and tracked by the NSLS2 Machine Operators.

Subject:	Safety System Work Permits		
Number:	PS-ESH-PRM-3.4.1	Revision:	1
		Effective:	10/12/2011
			Page 2 of 5

2.0 Responsibilities

2.1 The Photon Science Safety Officer is responsible for ensuring that this procedure is current and accurate.

2.2 Photon Sciences Safety System Work Permits must be reviewed and approved by [Photon Sciences ESH Operations staff](#).

2.3 Safeguards required by a Photon Sciences Safety System Work Permit may be placed only by Operations Coordinators, Machine Operators, the reviewers listed in Section 2.2, or when the work is on an interlock system, by a member of the Photon Sciences Interlock Group. When the permit is for work at the SDL, safeguards may be placed by Operators at the SDL, reviewers listed in Section 2.2, or when the work is on an interlock system, by a member of the Photon Sciences Interlock Group. If shielding removal is captured by a configuration control checklist at SDL, the responsible SDL operator is permitted to issue and approve the Safety System Work Permit.

2.4 Interlock activities with a different scope, requiring different controls, or having different closeout requirements should have separate safety system work permits.

2.5 The Photon Sciences Safety System Work Permit may be released for posting at the work site only by a person authorized in Section 2.3. The required safeguard(s) must be in place and noted on the permit before the Safety System Work Permit may be released.

2.6 Approval for Return to Service or other Close Out of the PS Safety System Work Permit must be done by a member of the PS ESH staff listed in Section 2.2 unless this authority has been delegated by the reviewer during the review process and designated under "Return to Service Requirements" in the field "other" on the Permit. All "Return to Service Requirements" must be satisfied before the "Return to Service" line is signed.

2.7 The ESH Facility Representative shall arrange for post-work radiation surveys when required, and may provide assistance in resolving health physics and other issues that arise during the determination of Required Safeguards or Restrictions on Work. Certain beam lines have the capability to run in either white beam or monochromatic modes. These beam lines may require a radiological survey when the mode of operation changes from monochromatic to white beam.

3.0 Definitions

Safeguards are the engineering or administrative Control(s) put in place to remove the radiological or LASER hazard while the work is being performed. These safeguards are determined by the PS ESH staff listed Section 2.2

Subject:	Safety System Work Permits		
Number:	PS-ESH-PRM-3.4.1	Revision:	1
		Effective:	10/12/2011
			Page 3 of 5

4.0 Procedure

4.1 The top portion of the PS Safety System Work Permit is filled out by the person doing the work or overseeing the work. They must check the box for the appropriate accelerator, beamline or LASER. Personnel performing the work should be listed along with the date, and an estimate of start and end dates.

4.2 The PS Safety System Work Permit is reviewed by a person designated in Section 2.2. Required controls on work must be designated and any restrictions, inspections, tests, or other close out requirements must be listed. If Approval for "Return to Service" is delegated, this must be designated on the Safety System Work Permit. Any required safety committee review must be listed in "Return to Service Requirements," and beam conditions and other requirements for radiation survey noted.

4.3 The approved PS Safety System Work Permit is then delivered to the Operations Coordinator (for all beam line/LASER safety systems), the Machine Operator (for affiliated NSLS or NSLS2 injector/storage ring safety systems), or the Operator at the SDL (for all work done at SDL) where it will be held until the time for the work to begin.

4.4 When the time comes for the work to commence, the Operations Coordinator or Machine Operator arranges for the Required Safeguard to be placed by a person authorized in Section 2.3. After this has been done and the "Safeguard Placed" blank is filled in on the form, the Photon Sciences Safety System Work Permit may be released for posting at the work site. For Beam Line work it is permissible to post the Safety System Work Permit at the Shutter Control Panel. The "Released By" blank is filled in and the yellow copy of the form is retained in the affiliated Control Room by the Operations Coordinator or the Machine Operator. The original (white) copy of the permit must be posted at the job location prior to the start of work and while the work is in progress. The pink copy of the Safety System Work Permit must be submitted to RCD personnel if a survey is required for return to service. The person posting the form must ensure that the people doing the work are aware of the location and significance of the posted Authorization. If copies of the Permit are required for posting purposes, they must be stamped "COPY."

4.5 When the work is completed and the required inspections and tests are done, the approval for "Return to Service" is signed by one of the approvers listed in Section 2.2 or a designee if so indicated on the Photon Sciences Safety System Work Permit.

4.6 The Required Safeguard may not be removed until the Photon Sciences Safety System Work Permit has been signed for "Return to Service." If the work is not complete or the job has changed, it may be appropriate to issue a new Photon Sciences Safety System Work Permit with a different safeguard (Controls) and Required Conditions to allow close out of the original form and removal of the original safeguard (Controls).

4.7 Once a Safety System Work Permit has been authorized for "Return to Service," and if no radiation survey is required, the Safety System Work Permit is removed from

Subject:	Safety System Work Permits		
Number:	PS-ESH-PRM-3.4.1	Revision:	1
		Effective:	10/12/2011
			Page 5 of 5

PHOTON SCIENCES DIRECTORATE REVISION LOG

Document Number:	PS-ESH-PRM-3.4.1	Review Frequency
Subject:	Safety System Work Permits	3 Years
Review signatures on file with master copy of controlled document		
Rev	Description	Date
1	Initial document release. Updated document from NSLS controlled document LS-ESH-PRM-3.4.1b Revision 6.	10/12/2011