

# **Physics Division Safety Policy**

2005

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## **PHYSICS DIVISION SAFETY POLICY**

It is the policy of the Physics Division, as well as the Laboratory, that all activities within the facilities for which the Physics Division is responsible shall be conducted in a manner such that all reasonable precautions are taken to protect the health and safety of employees and of the general public, as well as the environment. The Division fully supports and implements the principles of Integrated Safety Management.

Implementation and assignment of responsibility for safety are delegated at the same time as responsibility for performance of the operation. Safety performance is a consideration along with other performance items at the time of performance evaluation.

If, at any time, you are concerned about the safety of yourself or others, it is your responsibility to contact your supervisor, the Division ESH Engineer or a member of a Division safety committee for consultation. Also, remember that you always have the right and responsibility to stop work you or others are doing that you feel is unsafe. (See also Chapter 1.1.6 of the [ANL Environment, Safety and Health Manual](#).) Safety must be an integral part of all your activities. A listing of all the above personnel can be found on the Physics Division's ESH Organization web page. (<http://www.phy.anl.gov/div/esh/org/orglist.htm>) Copies of this list are posted at various locations on Division premises.

The following information is in abbreviated form, meant only to serve as a general guide. Further details are in a number of specialized Laboratory and Division documents such as the following:

- the Program for Accountability and Control of Sealed Radioactive Sources
- the Environment Safety and Health Manual
- the Comprehensive Emergency Management Plan
- the Transportation Safety Manual
- the Physics Division Electrical Safety Manual
- the Physics Division Cryogenic Safety Manual
- the Building Plan for Building 203

Copies of these documents as well as other material related to safety are available in the Physics Division ESH Engineer's office for your examination and use.

Remember that any form of carelessness in the Laboratory may involve serious consequences for others as well as yourself. Try to anticipate hazards and plan accordingly.



## PHYSICS DIVISION GENERAL SAFETY RULES

1. When you begin work in the Division, several safety related events will occur:
  - a. If your work involves entering Controlled Areas, and you require a personal dosimeter, you must meet with the Health Physics technicians, located in Room R110 (call extension 2-4138.) The Health Physics Technician will provide advice on the required radiation safety precautions and will arrange to have a badge issued in your name.
  - b. During the first week of your employment you will receive a request to attend a Human Resources New Employee Orientation Program. This program will explain the Laboratory's safety policies, your safety responsibilities and emergency procedures.
  - c. At the New Employee Orientation Program, you will be given a document titled the Job Hazard Questionnaire. Complete this document with your supervisor by the end of your first week at Argonne. Your answers to this questionnaire will determine your training curriculum while you are at Argonne. Once the questionnaire is completed, bring it to the Division ESH Engineer, in the Division Office.
2. Report to the Medical Department (2-2811) if you injure yourself. Also report the injury to your supervisor. If the injury appears to be serious, DIAL 911 immediately.

Supervisors should promptly report safety-related incidents and near misses to the division ESH Engineer.

3. Check with Waste Management or the Division ESH Engineer for disposal procedures when you need to dispose of hazardous materials (chemicals, flammable liquids, etc) or radioactive materials.
4. Eating, drinking, storing or preparing food in rooms designated as laboratories or controlled areas is prohibited. Additionally, applying cosmetics is not allowed in these areas. All pipetting by mouth is absolutely forbidden.
5. The water from drinking fountains and washroom faucets is potable. Water from laboratory faucets must not be used for drinking.
6. The "acid carriers", which are available in the stockroom, should be used whenever transporting large-size bottles (5 pounds or greater) of acids, caustics, mercury or flammable liquids.
7. When starting work on a new project, be certain that you are informed of possible hazards. Do not be shy about asking questions and do not proceed until you are certain you understand the answers.

The handling of cryogenic liquids (Liquid N<sub>2</sub>, O<sub>2</sub> and He) requires care. Proper protective clothing must be worn to eliminate the possibility of receiving a cryogenic burn. All glass-exterior dewars must be taped. Severe burns can result from direct contact with these liquids. Refer to the Physics Division Cryogenic Safety Manual for guidance if you handle

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cryogenic liquids.

The Division Chemical Hygiene Officer or the Industrial Hygiene section of EQO (extension 2-3310) should be contacted regarding any problems involving chemical toxicity, solvents, mercury, lasers, RF, noise, asbestos, confined space entry (which requires training and a Confined Space Permit), etc. If hydrogen or oxygen gas, or any potentially explosive chemicals are used or produced in any process, the Physics Division ESH Engineer should be notified. Refer to the Physics Division Chemical Hygiene Plan, available on the Division's web page or in the ESH Engineer's office. Anyone using a hazardous chemical must be aware of the information contained in its Material Safety Data Sheet. That information may be vital in the event of an accident.

Work on each new project or major piece of new equipment, or revision to existing equipment, must be preceded by a safety review of the planned work by the Physics Division's Safety Committee. Contact the ESH Engineer for information.

8. Work with radioactive materials may only be done in areas which have been posted as Controlled by a Health Physics technician. A Radiation Work Permit may be required when radioactive materials are involved. Contact the Radiation Safety Committee or the Division's ESH Engineer for advice. The Radiation Safety Committee and the Health Physicist or a Health Physics technician should be notified of work involving radioactive material or radiation-producing devices in order to assist in a safety review of the activity, recommend any necessary bioassay sampling and provide external personnel monitors. When the amount of activity or material and the nature of the work is such that Health Physics personnel or the Physics Division Radiation Safety Committee consider standby radiation safety coverage necessary, the work will not proceed without such coverage. Timely coverage will be supplied on request whenever possible. Request for after-hours Health Physics coverage should be made as far in advance as possible, preferably a week before the coverage is needed.
  - a. Monitor your hands, shoes and clothing when leaving an area containing exposed radioactive materials, or call Health Physics for a personal survey. A hand and shoe monitor is provided in the ATLAS Data room, at the North Ion Source and in Area 2 for this purpose and personnel are encouraged to use one of them on a regular basis and when leaving the ATLAS Experimental area. If you receive a positive indication of contamination, stay where you are and contact Health Physics.
  - b. If you are directly involved in a radioactive spill, move only far enough to be certain that you are out of danger, and call or have someone else call a Health Physics technician (2-4138). In the event of a serious spill in which you are not involved, you will receive instructions over the public address system. You should do a minimum of moving about (consistent with due regard for your own safety) until you are sure you are not tracking contamination.
  - c. Clothing suspected of being contaminated must not be placed in the dirty laundry or taken home until surveyed by a Health Physics technician and found to be uncontaminated.

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9. Potentially radioactive, contaminated or activated materials must not be removed from fume hoods or accelerator areas, or transferred from one laboratory to another without being surveyed by Health Physics personnel. The sole exception to this rule is the transferring of radioactive calibration sources. These may be transferred between controlled areas without a Health Physics survey, but they must be carried in an approved secondary container
10. Nuclear material (NM) must not be left unattended when in use and must be stored in a locked facility when not in use. All radioactive samples must be labeled to indicate their activity levels, isotope, batch number, composition (if NM) and the person responsible for the sample (if NM). See [Special Materials Users Guide, ANL East](#) for the definition of NM.
11. Experiments with open sources must be carried out in a hood, glove box or closed chamber, not on a bench top unless a review of the Physics Division Radiation Safety Committee and the Division's Health Physicist has determined that alternate measures provide adequate protection. The only hoods in Physics that are approved for use with radioactive material are located in rooms H-174 and M-025. Contact John Greene before using these hoods.
12. Work in the accelerator areas of Building 203 must conform to the facilities' safety procedures. These procedures vary between accelerators and may be modified for special experiments. Contact the Facility Manager of the accelerator to determine if site-specific safety training is required prior to work being performed in the area.
  - a. Personnel must be alert to the possibility of radioactive contamination on accelerator equipment from calibration sources, radioactive sources or activated materials. As part of the contamination control program, hand and shoe monitors are provided at ATLAS and the Dynamitron. Protective clothing (gloves) is available as is special monitoring equipment and services by Health Physics technicians. Personnel are required to use these when necessary. Contact the Health Physics office, the ESH Engineer or one of the Radiation Safety Committee members if you have any questions.
13. Cranes and other hoisting equipment may only be operated by trained, certified crane operators. All hoisting is to be completed in accordance with the [ANL-East Hoisting and Rigging Manual](#). Contact your supervisor or the Division ESH Engineer for details.

## PROTECTIVE EQUIPMENT

1. Safety glasses or face shields are to be worn in all designated areas and wherever a potential eye hazard exists. Non-prescription safety glasses can be obtained from the stockroom. The Division Office can give you the necessary details for obtaining prescription safety glasses upon your supervisor's recommendation.

Visitors who will be at Argonne for less than four months cannot be supplied with prescription safety glasses and should use laboratory supplied goggles or face shields. Contact lenses should not be worn in a chemical laboratory unless vapor-tight safety eye wear is also worn.

2. When circumstances warrant the use of safety shoes, these will be provided by the Laboratory. The Division Office can give details on how to obtain safety shoes when they are recommended by your supervisor. Sandals, open-toe or high-heeled shoes are prohibited in all laboratories, shops, maintenance and experimental areas.
3. A personal monitoring device is to be worn when working with radioactive materials, or in areas posted as requiring them (such as accelerator areas). The monitors are available from the Health Physics technicians, in room R110. Magenta lab coats are to be worn when working with dispersible radioactive material.
4. Make sure you know locations of emergency exits, showers, fire extinguishers and eye-wash stations in your area. Actions to take in the case of building evacuation are detailed in the [Building 203 Emergency Plan](#). All Physics Division personnel are to be familiar with that document.
5. Respiratory protection and other special types of protective equipment are supplied through EQO Industrial Hygiene. Using such equipment requires additional training supplied by EQO Industrial Hygiene. They can be contacted at 2-3310 for help and information.



## EMERGENCY PROCEDURES AND OPERATION

If immediate action is needed to get help in case of illness, injury or property damage - DIAL 911.

When you dial 911, you will be asked several questions by the operator. After these questions are answered, you may give other details you think important.

**Warning Signals** Full details of audible warning signals, causes and action to be taken are given on the back cover of the Argonne Telephone Directory. In the case of emergencies in Building 203, instructions will be given over the public address system.

## CALLING HEALTH PHYSICS

### **During Normal Work Hours**

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Between 8 AM and 4 PM, you may reach Health Physics by dialing 2-4138 or 2-6062. If the phones are not answered, your call will be transferred to the Health Physics technician's pager, and you will be asked to enter your phone number. The technician will then return your call.

Early scheduling of surveys will help ensure coverage. It is best to arrange for a survey at least a week before it is needed.

### **After Hours and Weekends**

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In an emergency, Dial 911. The emergency operator will contact the appropriate personnel.

In non-emergency situations, Health Physics personnel may be reached at home. Their home phone numbers are posted on the door to the Health Physics room (R110), and at ATLAS in the Data Room and Control Room.

## **LASERS**

All laser acquisitions and operating procedures require approval of the Physics Division Director and a review by the Laboratory's Laser Safety Officer. Standard Operating Procedures (SOP's) must be signed and posted on the door of the laboratory containing the laser. The approved procedures must be followed at all times.

It is the responsibility of any experimenter to be aware of the appropriate safety procedures for their work. Contact the Division ESH Engineer for details. All personnel using lasers must complete the appropriate training and have an eye exam before using them.

The ANL Environment, Safety and Health Manual details the requirements for safe operation of lasers in Chapter 6-2, Laser Safety.

## **CARCINOGENIC MATERIALS**

When working with carcinogens, always use proper handling procedures to avoid unnecessary exposure to the material. EQO - Industrial Hygiene (extension 2-5641) is available for assistance in establishing proper procedures to be used and, if necessary, any environmental monitoring.

The ANL Environment, Safety and Health Manual details the procedures to follow for safe handling of carcinogens in Chapter 4-5, Chemical Carcinogens. That chapter also contains a list of chemical carcinogens.

## **TRANSPORTING HAZARDOUS AND/OR RADIOACTIVE MATERIALS**

Movement of any hazardous and / or radioactive material must be done in accordance with the ANL Transportation Safety Manual. Before transporting any hazardous or radioactive material or equipment either into or out of Building 203, contact the Division ESH Engineer for the proper procedures, equipment and packaging. Note: Nuclear Material (NM) may only be transported - even between buildings within Argonne - by the Office of Safeguards and Security - Special Materials and Property Management (OSS-SMP.)

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## ES&H Organization, Physics Division 2005

The care of the environment, safety - both on and off the job - and employee health are the responsibility of everyone in the Physics Division. Below is a summary of the current organization within the Division which has been set up to help you. Do not hesitate to use this resource! Contact your supervisor or anyone listed below if you have a safety question or concern.

### PHYSICS DIVISION SAFETY COORDINATING COMMITTEE

I. Ahmad	S. Morss (221)* (PBC)
K. Bailey	T. Mullen (Chair)
H Cavett (PFS-BM)	J. Nelson (203 Bulding Mgr.)
J. Fuerst	T. O'Connor

### PHYSICS DIVISION GENERAL SAFETY COMMITTEE

G. Dely (200)(OQA)	T. Mullen
H. Cavett	J. Nelson
T. Lauritsen	T. O'Connor (Chair)
Z.-t. Lu	D. Phillips
S. Morss (221)* (PBCS)	B. Zabransky

### PHYSICS DIVISION CRYOGENIC SAFETY COMMITTEE

P. Brod (PNS) (360)	T. Mullen
K. Lister	J. Specht
S. Morss (221)* (PBCS)	G. Zinkann (Chair)

### PHYSICS DIVISION ELECTRICAL SAFETY COMMITTEE

K. Bailey	D. Seweryniak
S. Morss (221)* (PBCS)	S. Sharamentov
T. Mullen	K. Stoll (331)PFS-FP)
B. Nardi	

\* Ex Officio - For information purposes

### PHYSICS DIVISION RADIATION SAFETY COMMITTEE

I. Ahmad (Chair)	T. Mullen
J. Greene	E. Rehm
S. Morss (221)* (PBCS)	P. Reimer
G. Mosho (PBCS-HP)	R. Vondrasek

### BUILDING 203 AREA EMERGENCY SUPERVISOR

		<u>Phone</u>	<u>Page</u>
	T. Mullen	2-2879	4-1317
Alternate:	M. Brandner	2-2885	888-912-3471
Alternate:	D. Phillips	2-5359	630-314-1628

### QUALITY ASSURANCE REPRESENTATIVE

	<u>Phone</u>	<u>Page</u>
T. Mullen	2-2879	4-1317
Alternate: A. Bernstein	2-6661	

### ENVIRONMENTAL COMPLIANCE REPRESENTATIVE

	<u>Phone</u>	<u>Page</u>
T. Mullen	2-2879	4-1317
Alternate: J. Nelson	2-4002	

### HEALTH AND SAFETY COORDINATOR

	<u>Phone</u>	<u>Page</u>
T. Mullen	2-2879	4-1317
Alternate: J. Specht	2-3610	4-1423
Alternate: I. Ahmad	2-3612	

### CHEMICAL HYGIENE OFFICER

	<u>Phone</u>	<u>Page</u>
T. Mullen	2-2879	4-1317

### ALARA COORDINATOR

	<u>Phone</u>	<u>Page</u>
T. Mullen	2-2879	4-1317

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## **TO REPORT ANY EMERGENCY - DIAL 911**