

**ARGONNE NATIONAL LABORATORY
USER FACILITY ORIENTATION
(ESH100U)**

This course provides the following information:

- Description of Argonne policies and emergency procedures you will be expected to follow
- Additional information that will enable you to work safely at Argonne National Laboratory

When you have completed this course, you should be able to

- Explain how ANL's safety policy affects you while you are at ANL.
- Be aware of and follow the ANL security policy.
- Explain your responsibilities under ANL's stop work policies and procedures.
- Understand how to properly report emergencies while at ANL.
- Describe the proper response to site alarms or warning announcements.
- Understand the ANL vehicle safety and parking requirements.
- Explain your obligations under the ANL computer protection policy.
- Describe the ANL hazard communication policy and procedural requirement applicable to your work.
- Describe how you should respond to radiological postings at ANL.

1. ANL SAFETY POLICY

As a Department of Energy (DOE) facility, Argonne National Laboratory, complies with the DOE's worker protection program, which, in brief, stipulates that everyone here has a right to a safe place to work. While Argonne and your host user facility have the obligation to establish and enforce safe work practices, you share this responsibility. At Argonne, safety is considered to be EVERYONE'S responsibility. As such, it plays an integral role in the planning, review, and execution of all activities, including your work here. Although the primary mission of the Laboratory is scientific/technical research, The Department of Energy, the University of Chicago, Argonne and your host management put safety as the highest priority. The Laboratory Director has stated, "No work we do is so important that it need be done without proper safety measures".

The framework used by Argonne for all of our work is called Integrated Safety Management or ISM. ISM calls for us to define the work, identify all hazards, develop and implement hazard controls, work within these controls, and provide feedback to improve safety in future work

By working within this framework, your work here should be planned and performed in a safe manner. Each user facility has a specific experiment or work authorization process based on ISM. You are expected to follow this process.

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2. STOP WORK AUTHORITY

Everyone working at Argonne has the authority to stop work if unsafe conditions arise. The Argonne ES&H Manual describes your stop work authority in Chapter 1.1.

In short, the policy states: "Stop Work Authority" enables Argonne employees, visitors, facility users, and contractors to stop any activity that they deem to pose an immediate danger to themselves, other employees, the public, or the environment. Individuals who find themselves or others engaged in an unsafe activity or observe unsafe working conditions are empowered and obligated to stop any activity that they deem to have placed them or others in immediate danger. It is also an obligation of anyone stopping work to bring such conditions immediately to the attention of the DD/DH or line supervisors of the relevant organization."

3. REPORTING EMERGENCIES

To report an emergency from any Argonne telephone, dial 911 and stay on the line until you are instructed to hang up. If you are using a cellular/mobile phone, dial 630-252-1911. If you are calling from a pay phone, you do not need coins.

When asked about your location, if you are using an Argonne phone, look at the 911 sticker (see photo). The building and room number are listed there. Dialing 911 initiates a group alerting system that involves the fire, security, and medical departments, among others. As soon as it is safe to do so, inform your host about the emergency.

Emergencies include the following:

Vehicle accidents, fires, large chemical spills, injuries, acute illnesses, any utility interruptions, suspicious packages, bomb or other terrorist threats and criminal activity.

Do not delay in calling 911. Apparently minor accidents or fires can quickly become serious events. Even a few minutes can make a significant difference.



4. SITE ALARMS AND WARNINGS

Several types of emergency notification systems are used at Argonne: outdoor sirens, the public address system warning tone and voice announcements, and building alarms. Sirens and the public address system warning tones are tested on the first Tuesday of each month at 10:00 a.m. If you do not hear the warning alarms during the test, contact your host so that ANL emergency management can be informed.

Tornado warnings are announced indoors by voice over the site-wide public address system. Outdoors, sirens are sounded when tornado warnings are issued. When you hear the warning, go immediately to a designated tornado shelter and stay there until the all clear is announced. Shelters are identified by signs such as those shown. If you are outdoors and hear the siren, seek shelter.

To find the nearest shelter,
follow signs such as this:



Take shelter in an area indicated by a
sign that looks like this:



5. FIRES

In the event of a fire, go immediately to a safe place, dial 911 from an Argonne telephone or 630-252-1911 from a cellular/mobile telephone and stay on the line until you are told to hang up.

The locations of fire extinguishers will be pointed out during your sector or building orientation. (If a small, contained fire occurs, you may use a fire extinguisher to put it out if you have been properly trained and you feel confident to fight the fire. Someone should call 911 at once.) Wall-mounted pull alarms are generally located near exit doors and should be used to alert personnel of a fire if no audible alarm is sounding. These alarms will also be pointed out during your sector or building orientation.

Be sure you know the exit routes from the area where you will be working.

When leaving a building in response to an alarm, avoid blocking exit routes and roadways. For information and instruction on when it is safe to return to the building, look for an Area Emergency Supervisor (AES) wearing an orange cap with the letters AES on it.



6. HEALTH CONCERNS



Injuries and Illnesses:

If anyone in your vicinity suffers an injury or acute illness, dial 911 from an Argonne telephone or 630-252-1911 from a cellular/mobile telephone (24 hours a day) and stay on the line until you are told to hang up. After you hang up, notify someone from your host facility. Argonne paramedics will respond and transport the injured or ill person to the nearest hospital emergency room or to the Argonne medical department, as the situation warrants. Do not attempt to take an injured or ill person to the Medical Department or hospital. Do not let an injured or ill person attempt to get to medical services on his or her own. Be aware that if you are the injured or ill person, emergency health care at an off-site facility is your financial responsibility. It is important for you to be familiar with the terms of your insurance coverage and your employer's coverage for occupational illnesses and injuries. Be sure you have your insurance card, health maintenance organization card, or other proof of insurance with you during your stay at Argonne National Laboratory. If you do not have medical coverage, short-term medical insurance can be arranged.

For non-emergency illnesses or injuries, go to the Argonne Medical Department, Building 201, during sick-call hours (Monday through Friday, from 10:30 a.m. to 12:00 noon and from 3:00 p.m. to 4:30 p.m.). Medical Department staff will either treat you or refer you to an appropriate off-site facility.

Pregnancies:

We would like to call attention to special considerations made available for pregnant women working in laboratory settings. Although declaration of pregnancy is voluntary, we encourage you to inform your host if you are pregnant so these special considerations can be discussed.

7. SECURITY

Argonne places a very high priority on health and safety in the workplace. Therefore, you may not bring any of the following items on site: firearms or other weapons, pepper spray, explosives or incendiary devices, open containers of alcohol, illegal drugs or pets. Specific authorization is required to bring in or take out hazardous material (including radioactive materials). Argonne reserves the right to inspect incoming or outgoing personnel or vehicles for prohibited material and/or government property. Therefore, any equipment or material owned by you or your institution should be clearly tagged. For more specific guidance, contact your host.



Argonne policy specifically prohibits the manufacture, distribution, sale, possession, use, or abuse of illegal or illegally obtained drugs on the Argonne site. Alcohol may be consumed only in the Argonne Guest House dining room or at approved Argonne functions. Visitors may bring alcohol onto the Argonne site only if it is transported in a closed container and consumed in Argonne's housing facilities. For further clarification, contact your host or the User Office for your host facility.

Security at Argonne is handled by the Argonne Protective Force, uniformed guards who are on site 24 hours per day, seven days a week. In emergencies, they can be reached by dialing 911 from any Argonne telephone or 630-252-1911 from a cellular/mobile telephone. For non-emergencies, the protective force can be reached at 2-5730 from an Argonne phone. Suspicious activities (theft, destruction of property, vandalism, criminal activity) should be reported to your host who will make sure Argonne Security Department is notified.

8. VEHICLE SAFETY AND PARKING

The Illinois Motor Vehicle Code applies at the Argonne site. Vehicle operators must have a valid driver's license or instruction permit, wear seatbelts, obey traffic signs and signals, have liability insurance, be alert for road hazards, and yield the right of way to pedestrians who are crossing at marked crosswalks.

On-site speed limits are as follows:

- Near entrances: 15 mph (24 km/h)
- All other locations: 30 mph (48 km/h)
- Residential area (600 area): 20 mph (32 km/h)

These limits are strictly enforced by the Argonne Protective Force! Violations are reported to your host.



Deer can pose a traffic hazard at Argonne and in the surrounding area. These animals roam the site, sometimes in herds, crossing roads without warning. Be alert at all times and SLOW DOWN when you see deer near the edge of the road.

To learn more about the white deer at Argonne go to http://www.anl.gov/Science_and_Technology/Virtual_Tour/deer.htm

Park only in marked parking spaces. Parking is prohibited at building loading/receiving docks, in spaces designated for the handicapped (unless the vehicle has properly displayed authorization), within 15 ft (4.6 m) of a fire hydrant, in fire lanes, and in reserved spaces.

Motorcycle and bicycle riders will be required to wear helmets on site, even though helmets are not required under Illinois law. In addition, moped riders, inline skaters, even users of wheeled cross-country ski trainers, all must wear helmets while on site. Helmets must be Department of Transportation (DOT) approved. The Protective Force will issue tickets to enforce the rules.

As of April 6, 2009, individuals operating motor vehicles on the Argonne campus are prohibited from using cell phones or other mobile communication devices while driving. The Protective Force will issue tickets to users who break this rule.

9. COMPUTER PROTECTION

Argonne employee and visitors are expected to comply with Argonne's computer protection policies and practices. Briefly, these policies specify that you must identify and protect sensitive information and computer applications, follow appropriate back-up procedures, and prevent any unauthorized use of Argonne computing and network resources. Any suspected compromise of computer security should be immediately reported to your host.

In order to use any of Argonne's user facilities, you must also take the Argonne cybersecurity course, ESH223. This course has a one-year retraining interval. While you are on the Argonne campus, your ESH223 training must be current.



10. SMOKING



It is the policy of ANL to establish a smoke-free environment for its workers and visitors. The smoking of tobacco products is thus prohibited in all interior space at either ANL site, except for those rooms/areas of the ANL Guest House and lodging facilities specifically designated for smoking. In addition, smoking is prohibited in any outdoor areas in front of air intake ducts or immediately in front of the main entrance to a building.

If you smoke, make sure your smoking materials are extinguished before you leave the area. Use the designated receptacles for cigarette butts.

11. WORKING ALONE

When activities anywhere at Argonne National Laboratory involve significant hazards, you are not permitted to work alone; you must remain in sight and sound of a second person who understands the work being performed and knows all pertinent emergency procedures. If you will be working alone conducting non-hazardous activities, make sure that someone from your host group is aware that you will be doing so.

12. HAZARD COMMUNICATION

Hazard communication is a critical part of integrated safety management (ISM). While every work activity may expose people to many hazards, the hazards from chemicals need special attention.



Chemical Safety. Argonne National Laboratory has worked to implement a system for controlling risks arising from the storage, use, transport and disposal of hazardous chemicals. A hazardous chemical is any chemical that is a health or physical hazard. This includes chemicals that have acute or chronic health effects including carcinogens, toxic or highly toxic agents, reproduction toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents that act on the hematopoietic system, and agents that damage the lungs, skin, eyes, or mucous membranes. As well as chemicals that are combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, reactive, or water reactive. Work with hazardous chemicals in laboratories requires the use of chemical fumehoods. Details of proper work practices for chemical fumehoods are available at: http://www.aps.anl.gov/Safety_and_Training/Fumehood_Work_Practices.pdf. This system recognizes your right to know the identity of chemicals to which you might be exposed, the hazards associated with them, and the results of any associated monitoring. It also requires you to provide, through your facility contact, information needed for your own safety and the safety of others.

As a user, you must

- Understand and know how to manage hazards posed by the substances you use
- Ensure that relevant hazard information is immediately available
- Follow the safety plan developed for the laboratory at which you'll be working

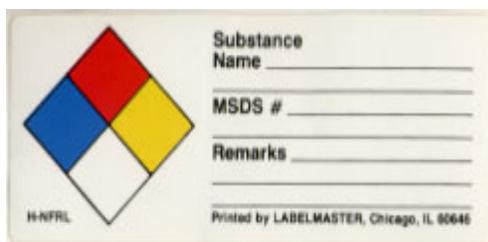
If you have further questions, contact the safety officer for your host facility.

Chemical Inventory. Each laboratory maintains a record of the chemicals used in its laboratory. You have the right to view this record and the obligation to fully describe any chemicals (and their hazards) that you bring with you or have shipped to Argonne.

13. MATERIAL SAFETY DATA SHEETS

Each laboratory is required to maintain material safety data sheets (MSDSs) for all industrial and reagent chemicals stored or used at the facility. A representative of your host facility will show you the location of these MSDS sheets. MSDSs for chemicals used at Argonne can be obtained when you are at Argonne via the Chemical Management System website at: <https://www.cms.anl.gov/>

Transportation of Hazardous Materials. The transportation of any hazardous material on the Argonne site must be in accordance with Argonne requirements. Do not transport hazardous materials in your own vehicle. Contact your host for guidance. Transport of hazardous materials to/from the Argonne site must be done in compliance with US Department of Transportation regulations.



Container Labeling. All reagent chemical containers must be labeled with the name of the reagent as it appears on the MSDS, appropriate hazard warnings, and the name of the person who is responsible for the container. In addition, if a chemical is peroxidizable, or otherwise becomes more dangerous with age, a "discard by" date must appear on the container.

Proper Attire. Proper attire for work in a laboratory setting includes closed-toes, covered-heel shoes and long pants. Sandals are not acceptable. Skirts may be worn if a lab coat is also worn. Safety glasses with sideshields must be worn in all chemical laboratories. Impervious gloves are required for work with hazardous materials.

To enter a construction area, you must wear appropriate clothing and safety equipment. The posted entry requirements could include some or all of the following:

- Safety glasses with side shields
- A hard hat
- Leather safety shoes, preferably ones that cover the ankle
- Long pants
- A shirt with sleeves

14. NON-CHEMICAL HAZARDS

At Argonne, hazard communication does not stop with chemical hazards. Since ISM requires that all hazards be identified, you must know about hazards posed all facets of the work you do. In addition to chemical hazards, consider the following as potential hazards:

- Physical Hazards
 - Impact / Penetration/ Compression
 - Electrical
 - Slips, trips and falls
 - Pinch points
- Physical Agents
 - Heat and cold
 - Non-ionizing Radiation
 - Microwaves
 - Magnetic fields
 - Ultraviolet and infrared radiation
- Lasers (Note: The use of class 3 and 4 lasers requires that several medical, training and procedural requirements are met.)
- Noise and vibration
- Ionizing Radiation

15. ELECTRICAL SAFETY

Personal Safety:

Electrical safety awareness and compliance with Argonne safety policy is for your protection. It is the most important part of your work activity at Argonne. Safe work practices require knowledge of all potential hazards, and the application of safeguards and precautions that effectively minimize the risks these hazards create. If you do not know or understand the hazards associated with your work or the equipment you are using, stop the work and ask your facility host for guidance in developing safe work practices that minimize the hazards involved.



Electrical equipment:

Non-commercial equipment, including modified commercially manufactured equipment, must have appropriate engineered safeguards and must also be reported (e.g., as part of your experimental safety assessment) to your host in advance and made available for inspection, testing, and certification by Argonne prior to use.

YOU ARE RESPONSIBLE FOR YOUR ELECTRICAL SAFETY!!

- Be observant.
- Report any electrical work that needs to be done.
- Do NOT attempt electrical work if you are not QUALIFIED and AUTHORIZED.
- Recognize electrical hazards and exercise safe work practices
- Prevent trip hazards - Do not run extension cords on the floor unless properly covered. It is suggested that cords be run overhead, 7 foot minimum where practicable. Extension cords are TEMPORARY (90 days).
- Prevent overloading - Do not overload multi-plugs. Do NOT plug extension cords into extension cords.
- Prevent shock - Do not use damaged or frayed cords. Do insure that cords have a ground pin. Do use Ground Fault Circuit Interrupters (GFCI) when using electric hand tools. Do NOT use metal ladders when working around electricity. Do NOT touch exposed wiring - report this to your management.
- Recognize your hazards - as part of your facility-specific orientation, you will be briefed on potential hazards and precautions of the beam line equipment you will be working with.

16. CONTROL OF HAZARDOUS ENERGY SOURCES

Types of Energy Sources

- Electricity
- Gas, steam & pressurized liquids, Compressed gases
- Rotating parts
- Springs
- Raised loads

Lockout/Tagout (LOTO): Do **NOT** work on any energized systems! If work must be performed and LOTO is required, contact your host to arrange for LOTO.

Working on energized equipment

NOTE: Be aware that electrical equipment <50 Volts pose hazards as a consequence of high currents, and stored energy (even after the energy source has been removed). Particular care should be taken with equipment containing high capacitance and battery sources. Performing work on an electrically charged circuit, or in close proximity to an exposed electrical circuit where the possibility exists to contact live parts at a potential of 50 volts or greater, is considered "energized electrical work". Also, the act of using test instruments to verify that such circuits are de-energized prior to work is also classified as "energized electrical work".

"ENERGIZED ELECTRICAL WORK" IS NOT PERMITTED AT ARGONNE EXCEPT UNDER LIMITED CIRCUMSTANCES:

If you must perform, before you begin you must be:

- Qualified (trained and knowledgeable) Minimal ANL training courses are ESH 114, ESH 371, & ESH 375
- Authorized (Argonne approval of your written procedures, training and knowledge of the work to be performed) - Contact your host or facility ES&H Coordinator for specifics.

17. RADIATION SAFETY

At Argonne our goal is that there be no radiation exposures above background levels unless they are planned for and every reasonable effort has been made to reduce the exposure to as low as reasonably achievable. Before you perform work where you may be exposed to ionizing radiation, you will receive one of Argonne's radiation safety courses. You may also be asked to demonstrate your radiation safety awareness via a practical examination.

Dosimeters are specifically required for

- Personnel working with radioactive material samples, non-exempt sealed sources, and x-ray generators
- Anyone working in a controlled radiation area
- Women who have declared themselves to be pregnant and expect to work in an area of potential radiation

Additionally, dosimeters will be assigned to anyone who specifically requests one for his or her own comfort. Dosimetry results can be obtained by contacting your host, who can arrange for these results to be sent to you.

Personnel working with radioactive samples, x-ray generators etc. may require additional training.



Posted Requirements. Some areas may be posted with additional restrictions for entry because of potential radiation hazards. You are required to obey all such postings. An example of a posting is shown here.

Magenta and yellow colors, and the familiar radiation tri-foil are signals that a radiation hazard may be present. Do not enter a controlled area unless you are properly trained, qualified and authorized to do so.

Radiation Alarms. Personnel should be familiar with the radiation alarms and the response to an alarm on the experimental hall floor.

The response to a radiation alarm is:

- Stop work activities
- Exit the area immediately
- Notify the main control room and you host

If you have any questions concerning radiation safety, contact your host or the local Argonne Health Physics representative.

18. BASIC BIOSAFETY INFORMATION

- Entrances to areas containing biohazardous materials are posted with the universal biohazard symbol .
- This means that the following may be present:
 - human blood
 - human blood products or
 - any biological material which can pose a treatable human health risk
- Do not enter these areas without authorization.



- Biological wastes are stored in red, labeled disposal bags.
- Biological waste must only be handled by qualified and authorized personnel as they may present a low level health risk.

Bloodborne Pathogens

- **Regulated Medical Wastes (RMW) are any wastes contaminated with human blood or blood products.**
- **RMWs are potentially contaminated with human pathogens and must be disposed of properly.**
 - include blood from a cut, or
 - sharps such as a needle used by a diabetic for routine injection. *Estimates from the Centers for Disease Control and Prevention (CDC) are that 1 million accidental needle sticks a year occur in the United States.*



- **It is illegal to dump this type of waste into the regular trash.**
- **Used needles cannot be put in a regular waste basket.**
- **Call 911 if an accident generates a blood spill.**
- **Staff trained in blood spill clean-up are available.**

19. HIERARCHY OF HAZARD CONTROLS

Once hazards have been identified, ISM requires that the hazards be controlled. There are four levels of controls; process change, engineering controls, administrative controls and personal protective equipment. Used together, these controls provide protection in depth.

Process change is a method where the way the work is done or the equipment used is altered to eliminate or significantly reduce the hazard. A simple example is using a squeeze bulb instead of mouth suction to fill a pipette.

Engineering controls utilize tools and equipment to prevent the hazard from reaching you. Examples of engineering controls include laboratory fume hood, radiation shielding and machinery guarding.

Administrative controls alone can not prevent you from being exposed to a hazard, but they provide information on actions you must take to avoid the hazard. Training, standard operating procedures, permits, signs and labels are all examples of administrative controls.

Personal protective equipment (PPE) must only be used when all of the above methods have been implemented and the hazard is still not completely controlled. PPE is also used as extra protection from unexpected or accidental exposure, or when a person wants additional security. PPE includes safety glasses, goggles, face shields, lab coats, aprons, and steel toed safety shoes.

20. HAZADOUS WASTE

If your work here will generate hazardous chemical or radioactive waste, you must work with Argonne and your host to ensure that these wastes are stored and disposed of properly. Argonne will provide for hazardous waste disposal; your host will make sure you know the proper procedure. NOTE: Except in certain cases, waste chemicals may not be disposed of down laboratory, restroom, or storm drains.

21. ENVIRONMENTAL PROTECTION AND RECYCLING

Not only must Argonne protect its employees, visitors, users and contractors, we have a commitment to protect the environment. You may be asked to provide information on the potential environmental impact of your work here.

In addition, Argonne has an active recycling program. Much of the waste paper and cardboard that is generated can be placed in the blue bins that are provided for collecting recyclables.

This concludes the course. To review parts of it, use the back button on your browser.