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General Employee Training Live

***Course 15503
Course 5668 (Test)***



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Introduction to the Laboratory



A Message from the Director



Welcome to Los Alamos National Laboratory!

Los Alamos National Laboratory has played a role in some of the most transformational discoveries of the 20th and 21st centuries.

In 1943, scientists gathered on remote mesa tops in New Mexico for a secret project that would help end World War II. Our primary mission since then has been to care for the United States' (US's) stockpile of nuclear weapons.

This primary mission leads to a wealth of advances in science and technology.

Assurance without Testing

In 1992, the US voluntarily stopped full-scale testing of nuclear weapons. That means we must use other methods to assure that the US stockpile is safe, reliable, and effective.

To use an analogy, it's like assuring that a 1965 classic sports car will start—without being able to put gas in the engine. Each year, its parts get older; they may corrode or get brittle. Mechanics repair or refurbish some parts, and they may take samples or test other parts. They may even use computers to simulate what a running engine looks like, but they *cannot start the engine*.

Now make that many times more complex.

Assuring America's nuclear stockpile without full-scale testing requires a tremendous amount of science, technology, computational horsepower, and analytical tools.

Answering Questions

Los Alamos scientists are answering basic questions about the way things work at the atomic level. This leads to advances in medicine, clean energy, computing, earth sciences, and materials that do special things like conduct electricity without resistance. We must understand the way atoms behave and function at temperatures hotter than the sun, at crushing pressures, or moving at one million miles per hour.

Our people are highly trained, creative, and innovative. They have one-of-a-kind facilities to accomplish work that very few people in the world can do. We have a vibrant student and postdoctoral program because they are the talent who will solve

Introduction to the Laboratory

the problems our predecessors only dreamed of.

The answers to these problems apply not only to national security concerns but to the betterment of life for humankind.

Charlie McMillan
LANL Director

In This Section

General

By using this section and the student self-assessment, you will recognize basic information about the General Employee Training (GET) Program; Los Alamos National Laboratory's (LANL's, Los Alamos's, or the Laboratory's) history, current vision, mission, and values; and how we serve the nation today.

What You Will Learn

When you have completed this section, you will be able to recognize

- information about this handbook,
- the history of Los Alamos,
- the Laboratory's vision and mission,
- the Laboratory's values,
- how the Laboratory serves the nation today,
- the Laboratory's goals, and
- how the Laboratory is structured.

Reason for This Training

Los Alamos has both a proud history and a bright future because of the extraordinary people who work here. This training serves to help workers know they are connected to a historic institution that provides an important national security service to the nation. Taxpayers and the United States

(US) government entrust us with facilities, assets, and information that deserve the utmost care. Each of us shares the responsibility to perform our work safely, securely, efficiently, and with a dedication to excellence.

Laboratory Operations

LANL is a federally funded research and development center under the Department of Energy's (DOE's) National Nuclear Security Administration (NNSA).

The Laboratory is operated by Los Alamos National Security, LLC (LANS) under contract to the NNSA. LANS comprises four US organizations that partner to support the delivery of our national security science mission: the University of California, Bechtel National, BWXT Government Group, Inc., and the URS Corporation.

Training Requirements

All new workers at LANL who will stay more than 10 workdays during any consecutive 12-month period must take GET. Workers whose job assignments require unescorted entry to designated nuclear facilities and/or controlled radiological areas must pass the GET test. Your employer may also require the test.

These requirements comply with DOE Order 426.2; the Code of Federal Regulations (CFR) 10 CFR 835; and LANL procedure P781-1, Section 3.2.2.

Information about This Handbook

How This Handbook Is Organized

This handbook is divided into 14 sections. Each section contains

- learning objectives that tell you what you will learn in that section,
- information you need to know about the topic of that section, and

Introduction to the Laboratory

- a student self-assessment that reviews what you learned in that section.

A list of acronyms and an index are located in the last two sections of this handbook.

Definitions in This Handbook

Worker—Anyone who works at LANL is referred to as a Laboratory worker. A worker may be a LANS employee, contract or subcontract worker, or visitor.

Employee—Anyone who works for LANS at LANL is a Laboratory employee.

History of Los Alamos, New Mexico

Pajarito Plateau People

The area that now makes up Los Alamos County was populated from the late 12th century to the mid-16th century by the ancestors of today's neighboring Pueblo peoples. These people lived in villages, raising maize, squash, and beans. Wild game and domesticated turkeys provided meat.



Homesteading

Spanish settlers and their descendants used the area for summer grazing and seasonal farming. Homesteads were established in the latter part of the 19th century.

Los Alamos Ranch School

Los Alamos Ranch School, an exclusive boarding school for boys, operated from 1918 to 1943. Some reminders of the school remain in the area. Ashley Pond, located in the center of downtown Los Alamos, was named for Ashley Pond, founder of the school. Fuller Lodge was the dining and recreation building. The houses along the downtown street called Bathtub Row housed school staff and provided some of the classroom space.



Historical Preservation

Laboratory land contains more than 2000 identified cultural resources, including archaeological sites and historic structures and buildings, representing a history spanning 7000 years. Please be sensitive and avoid disturbing these areas. Follow all required reviews and permitting protocols for work projects.

For More Historical Information

Visit the Bradbury Science Museum and the Los Alamos Historical Museum in downtown Los Alamos and explore nearby Bandelier National Monument and Tsankawi Ruins for an interesting and informative look into the history of this area.

History of the Laboratory

Manhattan Project: Project Y

In the fall of 1942, the US government initiated the Manhattan Project, a secret World War II effort to create the world's first nuclear weapon. General Leslie Groves was appointed to oversee the wartime project. J. Robert Oppenheimer, a professor of physics at the University of California-Berkeley, was selected to lead the scientific endeavor.

Project Y

Los Alamos was chosen for Project Y (designing and building the device) because its location offered

- isolation,
- a good climate,
- a small population,
- housing at the Los Alamos Ranch School, and
- nearby government-owned land that could be acquired easily.

In about 2 years' time, Oppenheimer and a team of world-renowned scientists designed and built the atomic bombs that led to the end of World War II. On July 16, 1945, the first nuclear test took place at the Trinity Site in southern New Mexico.

Founding of the Laboratory

Following the success of the Manhattan Project and the end of the war, Oppenheimer and many of the other recruited Site Y personnel went back to their respective academic and research institutions. However, a core group stayed to carry on the work.

Norris Bradbury replaced Oppenheimer as director of the Laboratory in 1945. Bradbury had directed the testing of the device at Trinity and acknowledged a duty to continue the work begun at Los Alamos

during the war. He commented, "I feel that the bear which we have caught by the tail is so formidable that there is a strong obligation upon us to find out how to let go or hang on." (from "Establishment of Los Alamos National Laboratory, 1943," Michael Ann Sullivan, ©2004–2012).

Today, LANL continues to serve this nation.

The Laboratory Today

Our Mission

Our mission is to solve national security challenges through scientific excellence.

Our Vision

Our vision is to deliver science and technology to protect our nation and promote world stability.

Our Values

Above all else, we value our people and the extraordinary talents they bring to Los Alamos to accomplish our mission. To demonstrate this point, our values communicate the essence of the Laboratory:

SERVICE: Serving our country, our partners, our community, and each other.

EXCELLENCE: Ensuring timely mission execution through scientific, operational, and business excellence.

INTEGRITY: Building trust through intellectual honesty, ethical conduct, and individual responsibility.

TEAMWORK: Collaborating with colleagues and partners, respecting diverse opinions and backgrounds, vigorously debating alternatives, and coming together to achieve the best solutions.

Introduction to the Laboratory

STEWARDSHIP: Being good stewards of the taxpayers' dollars, the Laboratory, our community, and the environment.

SAFETY & SECURITY: Ensuring that safety and security are integral to everything we do.

Each worker, as well as the Laboratory as an institution, is expected to follow these essential values.

How We Serve the Nation

Our enduring value is our unique technical ability to work at the challenging intersection of our mission-essential nuclear capabilities, cutting-edge open science, and classified mission drivers.

We leverage our core strengths in all matters nuclear, delivering science and solutions to evolving national priorities, whether in defense, energy, or intelligence. We bring the best science to bear on tough national security challenges.

Laboratory Goals

Goal: Deliver national nuclear security and broader global security solutions

and

Goal: Foster excellence in science and engineering disciplines essential for national security in the next decade and beyond

by

Goal: Attracting, inspiring, and developing talent to ensure a vital future workforce

and

Goal: Enabling mission delivery through next-generation facilities, infrastructure, and operational excellence.

Laboratory Organizational Structure

The workforce is led by a senior leadership team, which includes the Laboratory director, deputy director, executive director, five principal associate directors (PADs), a number of associate directors (ADs), and key functional leaders.

Under a given AD directorate are divisions and programs. Under the divisions are groups, and groups are composed of teams.

Student Self-Assessment

1. The Laboratory's mission is
 - a. to provide employment for northern New Mexico
 - b. to solve national security challenges
 - c. to become the oldest national laboratory
 - d. to contribute to the economic base of the Southwest
2. Delivering science and technology to protect our nation and promote world stability is
 - a. second in importance to getting a job done
 - b. only important when the budget allows
 - c. the LANL vision
 - d. of concern only to managers
3. The values of the Laboratory are
 - a. of concern only to Lab managers
 - b. items to be implemented in the future
 - c. to be applied whenever it is convenient
 - d. to be followed by each worker here

Answers

3. d
2. c
1. b

Institutional Quality Assurance



In This Section

In General

By using this section and the student self-assessment, you will recognize the Laboratory's Institutional Quality Assurance Program and your responsibilities for quality at the Laboratory.

What You Will Learn

When you have completed this section, you will be able to recognize

- what quality means and why it is important;
- that the Laboratory's Institutional Quality Assurance Program results in work that meets safety, security, operational, and customer requirements; and
- your responsibilities for quality at the Laboratory.

What Is Quality?

The American Society of Quality states that quality is "a product or service free of deficiencies; conformance to requirements." LANL defines quality as "a condition achieved when an item, service, or process meets or exceeds the user's requirements and expectations." Quality is meeting your customer's requirements and expectations.

Quality assurance organizations at LANL provide quality management, weapons quality engineering, dimensional inspection, quality assurance, project management, quality control, and independent assessment services to customers throughout the Laboratory. Quality has development and oversight responsibility for implementing the

LANL Quality Assurance Program (QAP).
<http://int.lanl.gov/services/quality/index.shtml>

LANL has contractual requirements to ensure quality in all operations.

An example of a lapse in quality is the 1986 space shuttle Challenger disaster. Moments after this space shuttle launched, solid rocket booster joints burst and caused an explosion that killed seven people and destroyed the multimillion-dollar shuttle.

Another example is the 2010 Deepwater Horizon oil rig explosion. Because of weak cement around the well, 11 workers were killed and more than 4 million barrels of oil leaked into the Gulf of Mexico.

Both of these incidents are results of quality issues. Both of these incidents could have been prevented.

What Is the Laboratory's Quality Assurance Process?

The Institutional Quality Assurance Program is the Laboratory's documented program of good practices for performing activities in a controlled manner. These activities are accomplished in accordance with technical standards and operational safety requirements.

These practices are integrated in LANL's three-tiered requirements system:

- Governing Policies—high-level policies issued by the director that govern Laboratory work across the institution.
- Institutional Documents—system descriptions, program descriptions, procedures, and requirements notices issued by the Director's Office or

Institutional Quality Assurance

directorates. These apply to everyone in the institution or to broad cross-organizational functions.

- Local Documents—Functional series documents and local instructions that define processes, operations, or other information needed to perform certain work.

The Laboratory has many different types of work activities, all of which are governed under the umbrella of the LANL Quality Assurance Program defined in SD330. In addition to the Institutional Quality Program, these activities sometimes have specialized sub-tier, documented quality programs. Some of these work activities include

- research and development,
- weapons design and manufacturing,
- engineering, and
- construction.

How Is Quality Managed?

Quality is managed at the Laboratory by

- planning work to ensure that it is performed by qualified workers using approved processes, codes, and standards to achieve the specified product;
- conducting work only after risks to workers, the public, and the environment are formally analyzed and the risks are reduced as practical;
- reporting abnormal events and occurrences; and
- assessing work processes and results to improve process effectiveness and product quality.

What Is Important in Managing Quality?

Important criteria in the management of quality at the Laboratory include

- the clear identification of roles, responsibilities, and interfaces;
- workers who are trained and qualified;
- the aggressive identification and correction of problems;
- the use of current resource documents and well-maintained records;
- implementation of work policies, plans, and procedures;
- clearly specified design requirements;
- effective communication of requirements to suppliers;
- the requirement of inspections, tests, and verification documents;
- the management evaluation of progress against objectives;
- the conducting of audits and assessments to ensure compliance; and
- the evaluation, characterization, and management of software to ensure compliance.

Implementation of these practices results in well-planned, efficiently performed work. This work meets LANL standards for safety, security, environmental assurance, formal operations, and customer requirements.

What Are Your Responsibilities?

The success of the Institutional Quality Assurance Program depends on you. Although the Institutional Quality Group (QPA-IQ) provides you with tools and support, quality is actually your job. As a Laboratory worker, you must

- complete training required to perform your work;
- analyze and manage hazards and risks in your daily work;
- follow policies, plans, and procedures approved by your management;

Institutional Quality Assurance

- assess your work processes and products to promote improvement; and
- have a questioning attitude. If you see something that may not meet quality requirements, bring it to the attention of your management.

What if you suspect a counterfeit or defective item?

Report it immediately.

- Stop what you are doing—do not use the item in question. Collect the item and any items similar to it and segregate them.

- Contact your line manager and let him/her know you have a suspect/counterfeit item (S/CI).
- Contact the S/CI Coordinator (695-5282 or the S/CI Help Desk at scic@lanl.gov) to report the issue.”

For more information, see SD330, *LANL Quality Assurance Program*; Course 55424, *LANL Policy SD330 Quality Assurance Program*; and the QPA-IQ website (<http://int.lanl.gov/org/padops/admaser/quality-performance-assurance/institutional-quality-assurance/index.shtml>).

Student Self-Assessment

1. Institutional Quality Assurance at the Laboratory is
 - a. a system for managing quality assurance personnel
 - b. the responsibility of the Quality Assurance Champion
 - c. a program of good practices for performing activities
 - d. a way of ensuring that you report your time correctly
2. Quality is managed by
 - a. planning work, reducing risks, and reporting occurrences
 - b. conducting work before risks are formally analyzed
 - c. contracting work to service suppliers and vendors
 - d. following casual work-planning methods
3. Important criteria in the management of quality at LANL include
 - a. violations of organization procedures
 - b. environmental spills and releases
 - c. injuries and security infractions
 - d. trained and qualified workers
4. You can help support quality improvements by
 - a. entering your time every week
 - b. having a questioning attitude
 - c. following traffic regulations
 - d. recycling newspapers
5. If you suspect a counterfeit or defective item,
 - a. do not use the item; segregate it, report to your line manager, and contact the suspect/counterfeit item coordinator
 - b. rewrite the procedure to allow using it
 - c. throw it away and buy a new item
 - d. use it anyway; it is probably fine

Answers

- 5. a
- 4. b
- 3. d
- 2. a
- 1. c

Notes. . .

Facilities



In This Section

In General

By using this section and the student self-assessment, you will learn about the geographic setting of the Laboratory and a general description of Laboratory facilities.

What You Will Learn

When you have completed this section, you will be able to recognize

- the geographic setting and layout of the Laboratory,
- Laboratory building designations, and
- parking limitations.

Laboratory Geography

Geographic Location of Los Alamos

Los Alamos sits in the Jemez Mountains on Pajarito Plateau, just off the rim of the Valles Caldera, one of the largest volcanic calderas in the world. Los Alamos is located about 35 miles northwest of Santa Fe, the state capital.

Laboratory Land

Laboratory land covers 14 canyons and 12 mesas and is categorized into the following four general usage areas:

- experimental science,
- environmental research and buffer,
- administrative and technical services, and
- high-explosives research and testing.

Usage of Laboratory Land

The Laboratory consists of approximately 3,000 structures spread over 36 square miles (23,040 acres).

LANL property is divided into technical areas (TAs). TAs are grouped into units run by facility operations directors (FODs). The FOD units are made up of buildings and other structures, systems, and equipment that are related by function or activity, are located closely together, and serve a particular purpose.

Each building has a facility manager, a building manager, or a facility coordinator. These individuals can assist you with facility, maintenance, and/or safety issues. To find out who is assigned to your building and how to reach them, check the emergency point-of-contact information sign posted at the entry to your building or ask your group office administrator.

Work within your facility falls within a work management process that outlines hazards and facility work requirements. Ensure that you are familiar with work processes within your facility. For example, if a circuit breaker trips, do not reset it yourself. You must report it to your building manager or facility coordinator.

Names of Technical Areas and Facilities

Some TAs have geographic or process names from early Laboratory days. For example, Technical Area 3 (TA-3), the main and largest TA at LANL, is called South Mesa (SM). Other names refer to the work that is performed at the facility located there. For example, TA-55 is called the Plutonium Facility.

Facilities

Maps of Technical Areas

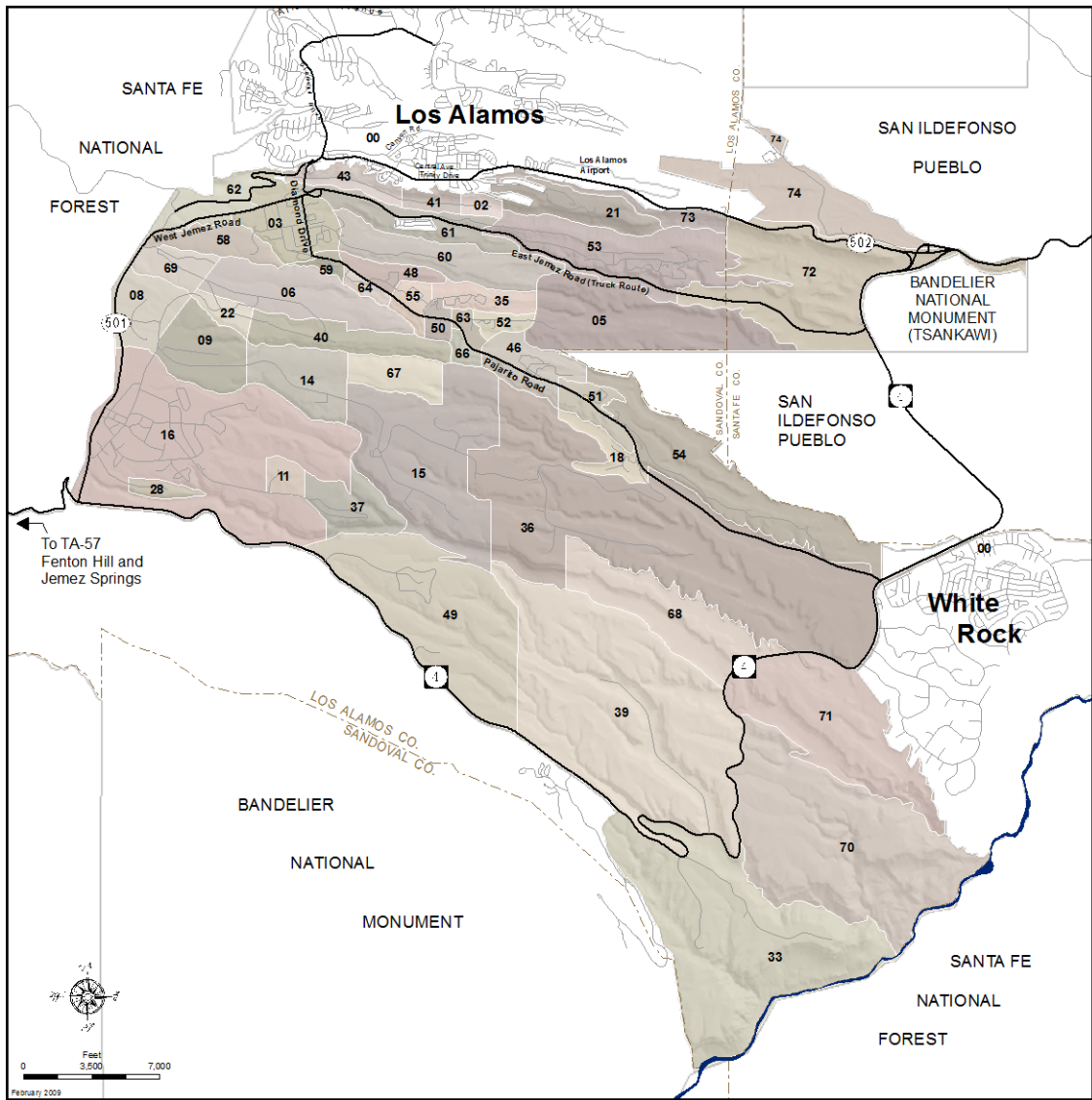
To access maps of Laboratory TAs online, go to LANL’s homepage. The Maps link can be found at the top of the page.

Locations of Technical Areas

The Laboratory has 49 active TAs, as shown on the following map.

Accessing Laboratory Property

Access Laboratory property through designated access points only. Do not cross Laboratory fences.



Technical Areas

TA-00	OFF SITE	TA-16	S SITE	TA-40	DF SITE	TA-54	WASTE DISPOSAL SITE	TA-66	CENTRAL TECHNICAL SUPPORT SITE
TA-02	OMEGA SITE	TA-18	PAJARITO LABORATORY	TA-41	W SITE	TA-55	PLUTONIUM FACILITY SITE	TA-67	PAJARITO MESA SITE
TA-03	SOUTH MESA SITE	TA-21	DP SITE	TA-43	HEALTH RESEARCH LABORATORY	TA-57	FENTON HILL	TA-68	WATER CANYON SITE
TA-05	BETA SITE	TA-22	TD SITE	TA-46	WA SITE	TA-58	TWO MILE MESA NORTH SITE	TA-69	ANCHOR NORTH SITE
TA-06	TWO MILE MESA SOUTH SITE	TA-28	MAGAZINE AREA A	TA-48	RADIOCHEMISTRY SITE	TA-59	OH SITE	TA-70	RIO GRANDE SITE
TA-08	ANCHOR WEST SITE	TA-33	HP SITE	TA-49	FRUJILES MESA SITE	TA-60	SIGMA MESA SITE	TA-71	SOUTHEAST SITE
TA-09	ANCHOR EAST SITE	TA-35	TEN SITE	TA-50	WASTE MANAGEMENT SITE	TA-61	EAST JEMEZ SITE	TA-72	EAST ENTRY SITE
TA-11	K SITE	TA-36	KAPPA SITE	TA-51	ENVIRONMENTAL RESEARCH SITE	TA-62	NORTHWEST SITE	TA-73	AIRPORT SITE
TA-14	Q SITE	TA-37	MAGAZINE AREA C	TA-52	REACTOR DEVELOPMENT SITE	TA-63	PAJARITO SERVICE SITE	TA-74	OTOWI SITE
TA-15	R SITE	TA-39	ANCHO CANYON SITE	TA-53	LOS ALAMOS NEUTRON SCIENCE CENTER	TA-64	CENTRAL GUARD SITE		

Laboratory Building Designations

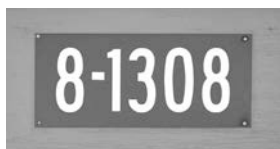
Building Designations

Each building has a designation that is made up of the TA number and the building number. The designation is posted on an outside wall and sometimes on a sign.

Example: Building Designation

The following examples are of building designations:

The designation 8-1308 stands for TA-8, Building 1308.



Some newer buildings will have a building designation posting, such as this one for TA-3, Building 1411.



Finding Your Building Designation

One way you can find your building designation is to look on your LANL telephone. A sticker attached to the phone shows the following information for that room:

- TA number,
- building number, and
- room number.



Check this sticker when you report to your new workplace. If your phone does not have a sticker, call the repair line at 7-8642 or the AskIt Service Desk at 5-4444 to request a new one; it will be mailed out to your mail stop. You can also pick up a sticker at the Verizon

warehouse at TA-60, Building 0091. If an emergency occurs, you can save valuable seconds by telling emergency response personnel your exact location.

Voice-over Internet Protocol (VoIP)

The VoIP telephone service is connected through the unclassified data network. If you move a VoIP phone to a different building or room, it is important that you record your new phone location by sending this information to tcateam@lanl.gov. This practice ensures that dispatched emergency services will arrive at your new location when a 911 call is made.

VoIP phones may not work during a network or power failure. In this event, use personal cellular phones, LANL Blackberries, LANL iPhones, or an analog phone to make 911 calls.

Laboratory Mail

Mail service for official LANL business is available to all LANL workers. Each worker has an assigned mail stop (MS), such as MS A100 (Administration Building). To avoid delays in mail delivery to your building designation, use your assigned MS as part of your official LANL address, especially on all mail leaving the Laboratory.

LANL encourages the use of electronic mail (e-mail) for official LANL business.

Personnel Directory

Laboratory Personnel Directory

You can access contact information for all LANL workers online from LANL's homepage (click on "phone" at the top of the page).

You are responsible for keeping your personal information up to date in the LANL directory. To check and/or change this information, click on "Change Your Phonebook Listing" within the "phone" screen and follow the instructions, or ask

Facilities

your group office administrator for assistance.

Check your information when you report to your workplace and if you move to a new location.

Parking

Parking Is Limited

Parking at the Laboratory is very limited, especially in the TA-3 area; therefore, it is important to plan ahead. Please consider these transportation options:

- the LANL taxi service, which supports Park & Ride and Atomic City Transit commuters from 5:30 to 8:30 a.m. and 3:00 to 5:30 p.m. and operates a dispatch service from LANL locations to

LANL locations from 8:30 a.m. to 3:00 p.m. For service, call 7-TAXI (7-8294);

- the Park & Ride commuter bus service, which operates between Albuquerque, Santa Fe, Española, Las Vegas, and Los Alamos;
- the Atomic City Transit bus system, which operates in Los Alamos and White Rock;
- the SECA Van Pool Service; and
- Carpool New Mexico.

For more information on these options, go to Commuter's Corner from the Blogs tab on the LANL homepage.

Illegal parking on LANL property is subject to citations, fines, and towing.

Student Self-Assessment

1. A building designation is the
 - a. nickname given to each building
 - b. technical area (TA) and building number
 - c. appointed building manager
 - d. set research mission for each building
2. Every Laboratory building has
 - a. a 6-foot security fence surrounding it
 - b. armed guards at the entrance
 - c. a designation posted on an outside wall and sometimes on a sign
 - d. all of the above
3. Illegal parking on Laboratory property is
 - a. overlooked if the driver is on important business
 - b. allowed for quick errands at TA-3
 - c. not allowed but there are no consequences
 - d. subject to citations, fines, and towing

Answers

3. d
2. c
1. b

Facilities

Notes. . . .

Policies, Procedures, and Other Requirements



In This Section

In General

This section covers certain areas regarding your employment.

What You Will Learn

When you have completed this section, you will have an overview of LANL's governance model and know the basics of the Laboratory's Requirements System and Hierarchy. You will also know LANL's policies on

- nondiscrimination, equal opportunity, affirmative action, and diversity;
- conflicts of interest;
- government property;
- political activities;
- gambling;
- smoking;
- workplace violence;
- harassment prevention; and
- reporting of improper activities.

Governance Model

On June 1, 2006, Los Alamos National Security, LLC (LANS), was awarded a federal contract with the DOE/NNSA to manage and operate the LANL Prime Contract. The management and operations contract is performance based; in other words, NNSA judges LANS's performance against mission deliverables and operational requirements. LANS is also accountable for the quality of its products and services and for assessing its

performance, identifying deficiencies, and implementing improvements.

The contract requires that LANS, in partnership with NNSA, develop a system that enables LANS to demonstrate that it is delivering on commitments safely, securely, and efficiently. This process validates that LANL (1) is continuously improving and (2) is providing more mission work for taxpayer dollars. This performance-based management and assurance system, known as the Contractor Assurance System (CAS), became effective October 1, 2006.

The CAS establishes a performance-based management and assurance system that builds on quantifiable data, supports line management, and facilitates executive decision making and continuous improvement. CAS enables LANL to

- maintain real-time insight into performance;
- assess the impact of proposed changes;
- characterize and manage risk, based on analysis and data;
- improve management and performance; and
- facilitate the accessibility of data for oversight purposes.

The various components that make up the CAS are designed to improve LANL management and performance based on two key principles: management by fact and continuous improvement. The effectiveness of the CAS relies on implementation by management, as well as the strength of the interface between deployed staff and line management.

Policies, Procedures, and Other Requirements

The CAS is designed in accordance with and governed by Section H of the Management and Operating Contract for Los Alamos National Laboratory (specifically, clauses H-3 and H-4). These clauses reflect NNSA's approach to contractor oversight, which emphasizes additional systems-level government oversight coupled with greater contractor accountability.

Requirements System

The Laboratory uses a single, consolidated Requirements System to help its workforce perform work consistently and efficiently, in accordance with the Prime Contract. The Laboratory translates contract requirements into documents that either

- describe a system or program that defines what is required and how contract requirements will be met or
- provide employees with procedures and/or instructions on how work will be performed.

Requirements System documents consist of governing policies, system descriptions, program descriptions, procedures, requirements notices, and local documents. The text of all Requirements System documents is available to all workers, unless classification requirements or other national security reasons protect the content of a specific section.

Laboratory websites, brochures, pamphlets, posters, viewgraphs, memoranda, spoken statements, or other communications that present or summarize Requirements System documents are considered nonbinding information and by themselves have no particular force and effect. However, a Requirements System document and its requirements may also be issued as a brochure or in electronic form as a webpage, if properly identified.



Hierarchy of Documents

The Hierarchy of Documents in the Requirements System has three levels and is based on the purpose and contents of the document, its applicability, and the issuing authority (IA) (see the following table, *Hierarchy of Requirements System Documents*). The first level, Governing Policies, provides the organizational basis and framework for the Laboratory's Requirements System. The second level, Institutional Documents, applies to everyone in the institution or to broad cross-organizational functions. The third level, Local Documents, applies to specific organizations within a directorate, programs, facilities, types of work, or types of workers and does not apply to the institution as a whole.

All workers are expected to follow all governing policies and all institutional and local requirements made applicable to them by their managers or supervisors.

Policies, Procedures, and Other Requirements

Hierarchy of Requirements System Documents			
Purpose	Applicability	Issuing Authority (IA)	Content
<i>Governing Policies</i>			
Policy Statements	Institution	Laboratory Director (DIR)	High-level policy framework.
<i>Institutional Documents</i>			
System or Program Descriptions	Institution	DIR or Principal Associate Director (PAD)	Institutional management system or institutional program.
Procedures	Institution	DIR, PAD, or Associate Director (AD)	Institutional document describing to the manager and/or worker how work is to be performed.
Requirements Notices	Institution	DIR, PAD, or AD	Urgent, short-term requirements that expire within 1 year from date of issue.
<i>Local Documents</i>			
Local Instructions or Functional Series Documents	Limited	DIR, PAD, AD, Facility Operations Directors, Division Leader, or Group Leader	A local practice with a limited application, or work requirements by or for a specific organization(s) to perform a specific function.

Accessing Policies and Procedures

You can access institutional documents from the LANL homepage under Performance, Policy Center.

Please see PD801, *Ethics Program*, and PD311, *Requirements System and Hierarchy*, in the Policy Center.

Your Responsibilities

Some key responsibilities that apply to all workers at the Laboratory are summarized in this section.

LANS employment policies generally do not apply to contract workers. If you are a contract worker, talk to your employer for information about the terms and conditions of your contract.

Nondiscrimination, Equal Employment Opportunity, and Affirmative Action

Nondiscrimination and Equal Opportunity

LANS does not engage in discrimination against or harassment of any person employed by or seeking employment with the Laboratory on the basis of race; color; national origin; ancestry; religion; age; sex; gender identity; sexual orientation or preference; marital status or spousal affiliation; physical or mental disability; medical conditions [including, but not limited to, human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), cancer-related illnesses, and

Policies, Procedures, and Other Requirements

illnesses resulting from genetic characteristics]; pregnancy (including childbirth and medical conditions related to pregnancy and childbirth); status as a disabled veteran, recently separated veteran, other protected veteran, or Armed Forces service medal veteran; genetic information with respect to applicant or employee; and citizenship within the limits imposed by federal laws or regulations.

Equal employment opportunity and nondiscrimination applies to all Laboratory employment practices, including recruitment, selection, promotion, transfer, merit increase, salary management, training and development, and separation.

Managing Diversity

LANL is committed to creating and maintaining a work environment in which all employees can reach their full



potential while pursuing the Laboratory's mission and objectives. For more information about LANL's diversity policy, contact the Human Resources Office of Diversity and Strategic Staffing (HR-ODSS) at odss@lanl.gov.

Affirmative Action

LANL is committed to applying good-faith efforts to achieve the prompt and full use of minorities, women, persons with disabilities, and covered veterans in all segments of the workforce. These efforts conform to current legal and regulatory requirements and are consistent with LANL standards for quality and excellence.

If You Have Questions

For questions about nondiscrimination, equal opportunity, or affirmative action, refer to PD712, *Equal Employment Opportunity, Affirmative Action, and Diversity*.

Conflict of Interest

Avoid Conflict of Interest

LANL seeks to avoid conflict-of-interest situations whenever possible. These situations may involve either an actual conflict of interest or the appearance of a conflict of interest. See PD801, *Ethics Program*; P832-1, *Conflict of Interest: Technology Transfer*; and P723, *Conflicts of Interest*.

Outside Employment

If you plan to work at another job while employed at the Laboratory or during a leave of absence, you must have your group leader's approval. Some restrictions may be required to avoid a conflict of interest. You may not participate in outside employment if a conflict of interest exists or appears to exist.

Example: Outside Employment

John wants to teach a physics course for a local university. Before he may begin teaching, he must complete Form 701, *Outside Activity Permission Request*, to get approval from his group- and division-level managers and LANL's conflict of interest officer. If teaching does not interfere with his LANL job and no conflict of interest exists, approval may be given.

Gifts, Entertainment, Favors, and Kickbacks

You must not solicit or accept a gift, entertainment, favor, gratuity, loan, or other item of value because of your position at the Laboratory, nor should you offer anyone a gift on a similar basis. However, you may accept unsolicited advertising novelties or ordinary business courtesies, such as a modest business lunch. See P722, *Business Gifts and Gratuities*, and P815, *Allowable Costs*.



Example: Gift

A computer company wants to send Julie, a manager, a complimentary laptop computer in the hope that she will favor the company for future purchases. Julie may not accept the equipment.

Privileged Information

You may not use proprietary data or privileged information obtained through LANS employment for personal purposes, for favoritism in purchasing goods or services, or in any other unauthorized manner.

Example: Privileged Information

Marie owns stock in a laser company that supplies equipment to LANL. She knows that her group is planning to buy many expensive lasers for a new project. She releases technical information that gives the company a favored position in the bidding process. Marie has used privileged information for personal gain.

Contracts

LANS employees must follow specific policies and procedures when procuring or purchasing goods or services. If you require goods or services from an outside supplier, call or e-mail the Acquisition Services Management Division for advice on how to process a purchase request through procurement. You may contact a Procurement Help Desk (PHD) representative at 606-0368 or e-mail phdhelp@lanl.gov. Questions about the use of purchase cards and LANL's Purchase Card Program may be directed to the PHD at 6-0368.

Conflict of Interest Certificate

To help demonstrate compliance with requirements and to uphold the highest level of ethical standards, each LANS employee is required to complete and submit a Conflict of Interest Certificate (Form 1990).

Government Property

Using Government Property

All Laboratory facilities, grounds, supplies, and equipment, including surplus or salvage material, are US government property and are subject to federal laws and contract provisions that regulate their use and protection. See P821, *Government Personal Property*, and P821-3, *Private Personal Property*.

Government Property: Your Responsibility

You may use government property, including vehicles, only for official use. To drive a government vehicle, you must possess a valid driver's license and have no special driving restrictions (such as an interlock system). You are responsible for the proper use, control, and physical protection of all government property. You will be required to sign an accountability statement that lists the property-numbered items assigned to you. By signing this statement, you agree to take responsibility for the items listed on this statement.



The property administrator (PA) for your organization is available to assist you with all property-related issues, such as transporting government property only for official use. All property transported or shipped to a foreign country must be approved first by Export Control (5-2194).

If government property is lost or stolen, contact your PA and the LANL Investigative Services Team (LIST) at 5-6159 within 24 hours. Loss of or damage to government property resulting from deliberate or negligent acts may result in disciplinary action, up to and including termination. Thefts and misuse of government resources are federal offenses subject to criminal prosecution and may also result in

Policies, Procedures, and Other Requirements

disciplinary action, up to and including termination.

Government Property Contacts

LANL's Property Management Group oversees property management at LANL. For more information on your responsibilities for assigned property, you may access the Property Management site under the Services tab on the LANL homepage, e-mail lanlproperty@lanl.gov, or call the Property Helpline at 5-3230.

Examples: Misusing Government Property

The following scenarios are examples of misuse of government property or resources:

- using LANL fax machines to advertise or solicit for a private business;
- using LANL mail services for personal mail;
- using government equipment to produce mementos, such as those for birthdays and retirements;
- taking home LANL supplies or equipment that your group no longer needs;
- using LANL computers to access non-work-related sites on the Internet, including those for pornography, gambling, and private business concerns;
- making illegal copies of computer software;
- using a government vehicle for non-work-related trips; and
- using LANL e-mail or mailing lists to send inappropriate material (sexually explicit, defamatory, etc.) to others.

Employees are generally given latitude to access the Internet on an incidental basis, such as to review the news. See P821, *Government Personal Property*.

Making Personal Telephone Calls

LANL telephones, including cellular telephones, are for official business use. Make personal calls only when you must, and keep them brief. If you must make personal long distance calls, call collect or charge them to your home telephone number or credit card.



Political Activities

Your Opinions Are Your Own

You may discuss politics at LANL, as long as the discussion does not interfere with your work and you make it clear that you are giving your opinion and not a position or policy of the Laboratory or LANS.

Taking Part in Political Activities

Your participation in political activities on your own time is your business. However, you may not campaign, solicit, or accept political contributions on LANL premises.

Wearing Campaign Buttons to Work

Employees may wear campaign buttons and discuss their political views with each other; however, overt politicking must be kept off Laboratory premises.

For more information, see P725, *Political Activities and Interactions with Elected Officials*.

Examples: Political Campaigning

The following are considered political campaigning:

- handing out campaign literature, buttons, or bumper stickers for your favorite candidate or cause; and
- asking other workers for campaign donations.

Gambling

No Gambling at Work

You may not gamble on Laboratory premises, nor may you use Laboratory equipment to gamble. See P731, *Discipline*.



Examples of Gambling

The following scenarios are examples of gambling:

- operating a football pool program on your office computer;
- conducting or taking part in an office lottery;
- playing a card game for money during your lunch hour; or
- selling or buying a numbers slip or ticket.

Smoking

No Smoking in Vehicles or Buildings

You may not smoke, which includes using electronic cigarettes, in government vehicles or inside Laboratory buildings. See P909, *Smoking and Smokeless Tobacco*.



- Smoking is prohibited inside all buildings located at LANL.
- Smoking is prohibited within 25 feet (horizontal and vertical) of doors and operable windows of LANL buildings.
- Smoking is prohibited inside offsite space leased by LANL.

Smoking Areas

FODs or other responsible line managers (RLMs) may provide designated smoking

areas outside of LANL buildings or LANL-leased space.

- Designated smoking areas must be outfitted with ash receptacles and may include benches, tables, or other amenities.
- FODs may impose seasonal smoking restrictions in designated smoking areas if needed to minimize wildfire hazards.
- Smoking in areas near Laboratory-leased space, or in areas occupied by LANL under other types of agreements, is subject to the requirements of the property owner or land holder.
- Smoking is allowed at the Laboratory outside of buildings and in undeveloped areas, unless expressly prohibited.
- Smoking is allowed in covered parking structures, unless otherwise prohibited.
- Smokers may not dispose of embers, cigarette butts, matches, or other trash on the ground or in open water (streams, storm runoff, puddles, or landscaping features).
- Smokers may smoke in privately owned vehicles, if in areas where smoking is not otherwise prohibited, but may not flick ashes, embers, cigarette butts, or other smoking materials out of vehicles while at the Laboratory.

Workplace Violence

Violence Is Prohibited

Violent behavior and threats of violence are unacceptable conduct and are prohibited at the Laboratory. See P724, *Workplace Violence*, for more information.

Examples: Workplace Violence

Examples of workplace violence include

- hostile or aggressive physical contact with another person,

Policies, Procedures, and Other Requirements

- a statement or body gesture that threatens harm to another person, or
- any conduct that would cause a reasonable person to believe that he or she is under threat of harm.

Call 911 if you believe that immediate action is required for a life- or injury-threatening situation.

Harassment Prevention

Harassment Is Prohibited

LANS is committed to taking reasonable steps to provide a work environment that is free from all forms of harassment on the basis of sex or any other legally protected category. See P721, *Harassment, Including Sexual Harassment*.

Sexual Harassment Is Prohibited

Sexual harassment is unacceptable conduct and is prohibited at LANL. Unwelcome sexual advances, requests for sexual favors, and other behavior or comments of a sexual nature that affect employment status or work performance or create a hostile work environment constitute sexual harassment. The display of sexually oriented visuals or images can also constitute sexual harassment and is prohibited.

Prohibited Sexual Relations

LANS prohibits sexual relations between a supervisor and a subordinate, regardless of whether the relationship constitutes sexual harassment or is consensual. LANS also prohibits sexual relations between a mentor and a mentee who are participants in a formal Laboratory mentorship program.

Reporting Improper Activities

Reporting Improper Activities Is Encouraged

LANS encourages workers to bring forward good-faith concerns of an improper activity or of a situation that constitutes a threat to security, health, safety, the environment, or quality and to have those concerns addressed in an independent, objective manner. LANS investigates reports of improper activities in a confidential manner to protect workers from retaliation for reporting such activities. See P793, *Employee Concerns*.

How to Report Allegations of Improper Activities

You may report allegations of improper activities by

- addressing workplace concerns with your manager;
- calling LANL's Employee Concerns Program (ECP) 24-hour helpline at 5-9999;
- calling Ethics and Audit (EA-Ethics) at 7-4257;
- sending an e-mail to ecp@lanl.gov;
- sending a written concern to MS D449, Attention: Helpline; or
- meeting with EA-Ethics personnel, who are located at TA-00, Building 787, Room 1001B, 125 Central Park Square, 1st floor.

Student Self-Assessment

1. Laboratory policy requires
 - a. discrimination against employees or applicants
 - b. a workplace that is free from violence and sexual harassment
 - c. equal employment opportunity and affirmative action
 - d. both b and c
2. Personal, long-distance telephone calls must be
 - a. charged to a home telephone or credit card and kept to a minimum
 - b. less than 10 minutes long
 - c. paid for by the Laboratory
 - d. none of the above
3. Workers at the Laboratory may not
 - a. reproduce computer software illegally
 - b. gamble in any form on Laboratory premises
 - c. accept gifts of value from vendors
 - d. all of the above

Answers

3. d
2. a
1. d

Policies, Procedures, and Other Requirements

Notes. . . .

Safety Expectations



In This Section

In General

By using this section and the student self-assessment, you will recognize LANL safety and security requirements.

For the purposes of this section, the term “safety” means “environment, safety, health, security, and quality.”

What You Will Learn

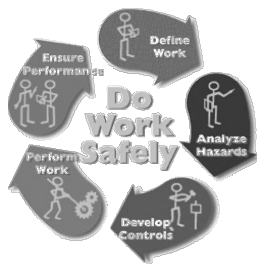
When you have completed this section, you will be able to recognize

- Laboratory values;
- how safety, security, environment, and quality are integrated with work activities through the Integrated Safety Management Program [as described in the Integrated Safety Management System (ISMS) Description Document];
- how Laboratory requirements are documented;
- your responsibilities for safety;
- the requirement to stop work when an activity presents a safety concern; and
- how to report safety concerns.

Laboratory Safety

Policy and Values

The following governing policies provide the basis for how we execute work. In doing so, we meet mission assignments within the framework of law, regulation, and contract requirements.



We conduct our work safely and responsibly to achieve our mission. We ensure a safe and healthful work environment for workers, contractors, visitors, and other onsite personnel. We protect the health, safety, and welfare of the general public. We do not compromise safety for personal, programmatic, or operational reasons.

We operate, manage, and maintain the facilities and infrastructure to achieve our mission. We manage our facilities to perform work safely and securely, support a healthful and positive working environment, and protect the nation's investment. We protect the property, equipment, and facilities from damage or loss resulting from accidents or improper working conditions.

LANL is dedicated to the concept that all accidents and security incidents are preventable. The Laboratory is committed to the goal of zero accidents through continuous improvement processes. All Laboratory employees are expected to support this goal to protect the environment, which includes zero nonpermitted releases and zero regulatory noncompliances.

Integrated Safety Management at LANL

The ISMS is the Laboratory program that integrates all facets of our work environment into a cohesive program that combines safety, environment, security, and quality requirements. The basic structure of ISMS (i.e., the core functions and guiding principles) is the overarching framework that LANL uses to manage the conduct of work under the contract.

Safety Expectations

This module discusses the following guiding principles for a strong ISMS as established by DOE Policy 450.4, *Safety Management System Policy*, and LANL:

- line management responsibility for safety,
- clear roles and responsibilities,
- competence commensurate with responsibilities,
- balanced priorities,
- identification of safety standards and requirements,
- hazard controls tailored to the work being performed,
- operations authorization, and
- worker involvement.

Remember, the term *worker* applies to anyone working at LANL, including LANS employees, contractors, subcontractors, and visitors, and may include full- and part-time workers, students, affiliates, and visitors.

The Integrated Safety Management (ISM) program describes the specific work activities that must be accomplished and is organized around the following five core functions:

1. Define the scope of work.
2. Identify and analyze hazards associated with the work.
3. Develop and implement controls.
4. Perform the work within controls.
5. Provide feedback and continuous improvement.

DOE Voluntary Protection Program



The DOE Voluntary Protection Program (DOE-VPP) is widely recognized for promoting excellence in occupational safety and worker health across the DOE complex. LANL has created a Voluntary Protection Program Office that reports to the Environment, Safety & Health Associate Director to implement this program across the Laboratory. The key to the DOE-VPP is worker involvement; therefore, LANL has established Worker Safety & Security Teams to enable employee participation.

Five DOE-VPP Elements

- Management Leadership
- Employee Involvement
- Work Site Analysis
- Hazard Prevention and Control, and
- Safety and Health Training

Employee Involvement

The LANL Worker Safety and Security Team is established at appropriate organizational levels (Institutional, Associate Directorate, Division, and/or Group), to ensure that all workers are represented (i.e., every worker must “map” to at least one team). The mission of the Worker Safety and Security Team is to improve safety and security at LANL through direct involvement of all people performing work on behalf of LANL. You are encouraged to meet your Worker Safety and Security Team representative and participate in improving safety and security at LANL.

For more information, see LANL’s Worker Safety and Security Team website and LANL’s Voluntary Protection Program website under Safety on the LANL homepage.

Safety Requirements

Laboratory-Wide Requirements

Safety requirements are established for

- the entire Laboratory,
- each facility, and
- all work activities.

Laboratory-wide safety requirements are found in institutional documents, which include system descriptions (SDs), program descriptions (PDs), procedures (Ps), and requirement notices (RNs).

For more information about safety documents, call the Policy Office at 5-4965.

Local Documents

Functional series documents and local instructions define processes, operations, or other information needed to perform certain work (according to PD311, *Requirements System and Hierarchy*).

Manager Responsibilities

LANL managers have the following responsibilities:

- approve the activity-specific part of the integrated work document (IWD) based on evaluating the adequacy of controls;
- determine the competence and commitment of workers to perform specific work assignments in a safe, secure, and environmentally responsible manner and authorize them as appropriate; and
- monitor work to ensure that it is executed in a safe, secure, and environmentally responsible manner in accordance with the IWD.

Worker Responsibilities

You must not perform work unless it has been approved by your RLM and the FOD and you are confident that the work can be done safely. You must

- maintain required training and qualification to perform the work;
- provide practical knowledge and technical expertise, as needed, to define work tasks/steps, identify hazards, and establish controls that are workable;
- perform work in a safe, secure, and environmentally responsible manner and in accordance with any requirements contained in the IWD;
- stop work when hazards change or when you encounter unexpected work conditions;
- use lessons learned from any control failures, near misses, or incidents to make improvements; and
- check frequently to ensure that controls are functioning and are effective in controlling the risks.

Pause and Stop Work Authority and Responsibility

You have the authority and responsibility to pause and/or stop work when an activity presents an immediate or potential safety concern. Work must not resume until the concern is resolved. The Laboratory's *Procedure for Pause/Stop Work*, P101-18, contains requirements for all workers. The actions taken are based on the degree of hazard classification and risk to health, security, safety, and/or the environment.

Pausing Work

In general, if you observe an unsafe condition or act that may pose an imminent danger or other safety or security concern/hazard, you need to inform all workers and the manager engaged in that work and request that the work activity be paused and/or stopped.

For work that is paused as a result of a safety concern that can be resolved immediately and to the mutual satisfaction

Safety Expectations

of the workers involved, no reporting or further action is required.

Stopping Work

If the condition is determined to be NOT readily fixable, contact the RLM/designee as soon as possible, declare an official Stop Work, and proceed with the Stop Work requirements of the *Procedure for Pause/Stop Work*, P101-18.

Retaliation for Stopping Work Is Prohibited

The Laboratory prohibits retaliation against workers for stopping work for safety reasons. Any form of retaliation should be reported by the following means:

- If you are a Laboratory employee, report such retaliation to your supervisor or manager, call the Employee Concerns Program at 505-665-9999, or send an e-mail to ecp@lanl.gov.
- If you are a contract worker, report such retaliation to your employer, call the Employee Concerns Program at 505-665-9999, or send an e-mail to ecp@lanl.gov.

If your complaint of retaliation is not resolved by the Laboratory or contractor, call the DOE/NNSA Employee Concerns Hotline at 1-800-688-5713.

Reporting Safety Concerns

You may encounter safety concerns in your work area that are either unrelated to a work activity or do not pose an immediate concern. It is important to report these concerns so that they can be addressed. You do not have to give your name when reporting a safety or security concern. You also are protected from reprisal for reporting a problem.

How to Report Safety Concerns

To report a safety or security concern, you may

- notify your supervisor;
- call the Safety Help Desk at 5-7233, or send an e-mail to safety@lanl.gov;
- call the Employee Concerns Program at 505-665-9999, or send an e-mail to ecp@lanl.gov; or
- call the Security Help Line at 5-2002, or send an e-mail to security@lanl.gov (unclassified only).

Student Self-Assessment

1. At the Laboratory, we
 - a. conduct work safely and responsibly
 - b. ensure a safe working environment
 - c. protect the health, safety, and welfare of the general public
 - d. all of the above
2. The purpose of ISMS is to
 - a. separate safety and security issues from work activities
 - b. generate new ideas for the Safety and Security Council
 - c. integrate safety and security into all work activities
 - d. all of the above
3. All but one of the following are your safety and security responsibilities. The exception is
 - a. work without required training
 - b. perform work in a safe manner
 - c. use lessons learned to make improvements
 - d. stop work when you encounter unexpected work conditions
4. What should you do to report a safety or security concern?
 - a. notify your supervisor
 - b. call the Safety Help Desk
 - c. call the Security Help Line
 - d. any of the above
5. If you identify a safety or security concern in your own work,
 - a. continue working but notify a supervisor at the end of the day
 - b. notify your supervisor immediately
 - c. continue working but be extremely careful
 - d. stop working and go home for the day

Answers

5. b
4. d
3. a
2. c
1. d

Worker Protection: Occupational Safety and Health



In This Section

General

By using this section and the student self-assessment, you will recognize the purpose of the Worker Protection Program at the Laboratory and your rights and responsibilities related to occupational safety and health.

What You Will Learn

When you have completed this section, you will be able to recognize

- that the Worker Safety and Health Rule requires that DOE contractor workers are provided a safe and healthful workplace,
- Laboratory management responsibilities for worker safety and health,
- your rights as a Laboratory worker concerning safety and health, and
- your responsibilities as a Laboratory worker regarding safety and health.

DOE 10 CFR 851, “Worker Safety and Health Rule”

The rule requires that DOE contractor workers be provided with safe and healthful workplaces in which hazards are abated, controlled, or otherwise mitigated in a manner that provides reasonable assurance that workers are protected from the hazards associated with their jobs. To accomplish this requirement, the rule establishes management responsibilities, worker rights, safety and health standards, and required training. DOE contractors and

their workers are covered by the rule.

Contractors include parent corporations and subcontractors that have responsibilities for performing work at a DOE site in the advancement of a DOE mission.

LANL is dedicated to the concept that all accidents and security incidents are preventable. LANL is committed to the goal of zero accidents through continuous improvement processes. This Zero Accident Performance goal, including zero nonpermitted releases and zero regulatory noncompliances with respect to the protection of the environment, is an expectation of all LANL employees.

If you have questions about occupational safety and health rights and responsibilities, ask your supervisor or call the Occupational Safety and Health Division office at 606-0295.

The Laboratory’s Responsibilities

LANL and subcontractor management have the responsibility to

- establish written safety and health policy and goals,
- provide mechanisms to involve workers in the safety and health program,
- establish procedures for workers to report hazards and stop work,
- use qualified safety and health professionals,
- comply with workplace safety and health requirements applicable to the covered workplace, and

Worker Protection: Occupational Safety and Health

- hold workers accountable for environment, safety, and health (ES&H) performance.

Your Rights

As a LANL worker, you have the right to

- notify the Laboratory or DOE office about workplace hazards without reprisal (you may ask that your name not be used);
- express concerns related to worker protection;
- decline to perform an assigned task because of a reasonable belief that, under the circumstances, the task poses an imminent risk of death or serious bodily harm to you, combined with a reasonable belief that time is insufficient to seek effective remedy through the normal hazard reporting and abatement procedures;
- have access to DOE/LANL worker protection publications and to the worker safety and health program for your workplace, standards, and procedures applicable to the workplace;
- observe monitoring or measuring of hazardous agents, have access to the results of exposure monitoring, and be notified when monitoring results indicate that you were overexposed to hazardous materials;
- receive results of inspections and accident investigations on request;
- have access to some accident and illness recordkeeping logs and the

information in records of any workplace illness or injury you experienced;

- have a representative accompany the DOE's Director for Enforcement during the authorized inspection of your workplace; and
- participate in the activities referenced in 10 CFR 851, "Worker Safety and Health Rule," on official time.

You may file a safety concern anonymously by calling the ES&H Hotline at 5-SAFE (5-7233) or by contacting the DOE/NNSA LAFO by calling 7-5105, by mail to MS A316, or by calling the DOE ECP 24-Hour Hotline at 1-800-688-5713.

Employee Responsibilities

As a Laboratory worker, you must

- comply with Worker Safety and Health requirements of the 851 Rule (see Module 5, *Safety Expectations*, for more information);
- report hazardous conditions to your supervisor promptly;
- respond to emergency signals and report emergencies immediately;
- perform all work safely; and
- stop work if you believe an activity is hazardous to workers or the environment.

Student Self-Assessment

1. The goal of the Worker Safety and Health Rule is to
 - a. provide a workplace that is free from recognized and uncontrolled hazards
 - b. prevent government interference
 - c. prevent sexual harassment
 - d. all of the above

2. The Laboratory's responsibilities are to
 - a. involve workers in the safety and health program
 - b. establish procedures for workers to report hazards and stop work
 - c. use qualified safety and health professionals
 - d. all of the above

3. All but one of the following are your rights as a Laboratory worker. The exception is to
 - a. observe the monitoring of your workplace
 - b. notify the DOE office about workplace hazards
 - c. use a government vehicle for personal business
 - d. decline to perform tasks that pose an imminent risk of danger

4. All but one of the following are your responsibilities as a LANL worker. The exception is to
 - a. report hazardous conditions promptly
 - b. monitor the workplace for toxic dust
 - c. comply with worker safety and health requirements
 - d. respond to warning signals and report emergencies

Answers

4. b
3. c
2. d
1. a

Notes. . . .

Industrial Hygiene and Safety



In This Section

In General

By using this section and the student self-assessment, you will recognize types of health and safety hazards in the workplace and the roles of industrial hygiene and safety programs in maintaining a healthy and safe workplace.



What You Will Learn

When you have completed this section, you will be able to recognize

- the roles of industrial hygiene and safety in the workplace,
- the types of workplace hazards and their potential impact,
- that unsafe work practices can create hazardous conditions,
- work planning methods used at the Laboratory,
- methods used to evaluate and control hazards, and
- the services of industrial hygienists and safety engineers.

Industrial Hygiene and Safety

Industrial hygiene and safety involves the anticipation, recognition, evaluation, and control of workplace hazards. Industrial hygiene focuses on health hazards, whereas industrial safety focuses on physical hazards. These hazards can cause illness, discomfort, serious injury, or death and are described in this section.

Industrial Hygiene and Safety Programs

Occupational Safety and Health Organization

Personnel in the Occupational Safety and Health (OSH) Division support you and your managers to help ensure a safe and healthy workplace. Contact them for help with institutional health and safety issues and for help with regulatory compliance issues.

Safety Help Desk 665-7233 (665-SAFE)
safety@lanl.gov

You may also have deployed health and safety professionals in your organization. Make it a point to meet these individuals, and make use of their valuable expertise early in the project planning process and as needed.

Agencies Governing Industrial Hygiene and Safety

Several agencies establish the regulations, standards, and guidelines for industrial hygiene and safety programs in the workplace.

OSHA—Occupational Safety and Health Administration (issues mandatory regulations that have the power of law).
Website: <http://www.osha.gov>

ANSI—American National Standards Institute. Website: <http://www.ansi.org>

NIOSH—National Institute for Occupational Safety and Health. Website: <http://www.cdc.gov/niosh>

Industrial Hygiene and Safety

ACGIH—American Conference of Governmental Industrial Hygienists.
Website: <http://www.acgih.org>

DOE—Department of Energy. Website: <http://energy.gov>

Laboratory Requirements

Laboratory requirements define how the Laboratory implements the regulations and standards established by the abovementioned agencies. To access these requirements online, go to the Laboratory's homepage, select Policy Center within the Performance Tools tab, and search by the key word or subject area.

Hazards in the Workplace

Types of Health Hazards

The types of health hazards to which you could be exposed in the workplace are

- chemical and physical hazards;
- biological hazards: rodents, insects, molds, bacteria, yeasts, and viruses [such as hepatitis B virus (HBV), HIV, and hantavirus];
- ergonomic factors: repetitive motion and improper posture when lifting or handling materials; and
- others, including thermal and radiological hazards.

Types of Physical Hazards

The types of physical hazards that you could encounter in the workplace may involve

- physical environment, including wet or slippery floors, uneven walking surfaces, poor lighting, ice and snow, and elevated work surfaces;
- hazardous energy sources, including electricity, pressure, vacuum, and hydraulics;

- mechanical hazards, including unguarded or improperly maintained equipment; and
- process hazards, including those arising from activities such as welding (such as fire or pressure) or machining (such as pinch points).

Unsafe Work Practices

Unsafe work practices have led to serious workplace injuries. Some of these practices are the

- improper use of equipment, such as cranes and hoists;
- use of equipment (such as forklifts) without having the required training;
- use of improperly maintained equipment, such as power tools with frayed wires;
- failure to use personal protective equipment (PPE), such as hardhats or goggles;
- failure to follow procedures, such as those established for handling hazardous chemicals; and
- failure to stop or pause work when unexpected changes or conditions occur.



Types of Accidents, Injuries, and Illnesses

Accidents, injuries, and illnesses can result from

- getting struck by an object, such as a falling tool, or falling against an object, such as a piece of equipment;
- contact by a harmful substance, such as a spray of acid;
- contact with a harmful object, such as an energized electrical wire;

Industrial Hygiene and Safety

- getting caught in, on, between, or under equipment (**NOTE:** badge lanyards at LANL must be able to come apart);
- falling on the same level, such as a slip or trip, or from one level to another, such as from scaffolding;
- overexertion, such as a stress or strain on the body from improper lifting or from repetitive motion; and
- exposure to hazards, such as excessive noise, extreme temperatures, or chemical fumes or fibers.

Industrial Hygiene and Safety in the Workplace

Work Planning Methods

All work at LANL, whether research and development, maintenance, or production, must follow the requirements outlined in P300, *Integrated Work Management*, and related work control documents. P300 outlines how to define work, analyze hazards, develop controls, perform work, and evaluate performance of work. The work planning method used to help meet these requirements is the IWD, which contains the following parts:

Part 1—Activity-Specific Information

Part 2—Work-Area Information

Part 3—Validation and Release Information
(followed by work execution)

Part 4—Close-Out Information

All Laboratory workers take specific Integrated Work Management training for more details about this work-planning method.

Principles of Industrial Hygiene and Safety

Work planning involves the four principles of industrial hygiene and safety:

- anticipation: the identification of hazards before an operation begins or a facility is constructed,
- recognition: the identification of hazards and their effects,
- evaluation: the analysis of hazards and their effects, and
- control: the implementation of specific requirements to eliminate or mitigate hazards and their effects.

Hazard Recognition and Evaluation

Recognizing Hazards in the Workplace

Identifying hazards is integral to maintaining a safe and healthy workplace. You should be alert to any hazards in your work area and help identify any hazards in your work activities. Using observations (seeing, smelling, hearing) and noticing body signs and symptoms will aid in recognizing hazards.

Conditions That Affect the Severity of a Hazard

The severity of a hazard is affected by workplace conditions and the conditions of exposure to the hazard. For example, the amount of stored energy in a pressure system, the type of unguarded rotating equipment, the height of an elevated working surface, or the voltage of an energized system affects the severity of hazards present.

The types of chemicals present and conditions of exposure can also influence hazard severity. Exposure conditions include the route of entry into the body, concentration, exposure time, and individual susceptibility.

Evaluating Hazards in the Workplace

To understand health effects and to apply effective control measures, the hazard—as well as the degree or amount of the hazard—must be determined. Observation

and judgment, combined with objective scientific measurements, are used to determine the quality and quantity of a hazard. Be aware that the hazard may not give signs that you can sense. For example, your senses cannot detect an odorless, clear gas or vapor and cannot determine if the rigging on a crane can carry the weight of a load.

Using scientific instruments to determine the quality and quantity of a hazard can be very precise. However, scientific methods are not available for all hazards.

Control of Hazards

Methods of Control

Hazards in the workplace can be controlled by various methods. P300, *Integrated Work Management and Safety*, lists the required hierarchy of control methods from the most preferred to the least preferred:

1. Elimination
2. Substitution
3. Engineering controls
4. Administrative controls
5. PPE

Elimination

Elimination is the removal of a hazard from the operation.

Substitution

Substitution is the replacement of a hazardous material or process with a less-hazardous material or process.

Engineering Controls

Engineering controls are mechanical or structural systems used to reduce or minimize hazards.

Examples include

- fume hoods/glove boxes,



- interlocks,
- shielding, and
- pressure vessels.

Administrative Controls

Administrative controls are requirements established to minimize hazards. Some examples are

- integrated work documents,
- limits on exposure time,
- signs and postings,
- training, and
- access controls.

Personal Protective Equipment (PPE)

PPE is the least preferred method of control and should be used only to supplement other control methods. Some examples of PPE are



- protective clothing (lab coats, coveralls, gloves, hardhats, and safety shoes);
- protective eye wear (safety glasses and goggles);
- hearing protection; and
- respirators.

PPE required for your work will be provided. Do not bring personally obtained PPE to the Laboratory.

Specific Industrial Hygiene Programs

Industrial Hygiene Programs

OSH manages some industrial hygiene programs for the Laboratory to minimize health hazards in the workplace and to help ensure the well-being of workers. These programs include

- asbestos, beryllium, and lead work;
- confined spaces;

Industrial Hygiene and Safety

- chemical hazard communication, chemical hygiene, and chemical storage;
- hearing conservation, respiratory protection, and PPE;
- noise and temperature stress;
- biosafety, including bloodborne pathogens;
- ergonomics; and
- specific hazards: carcinogens, toxic materials, and nonionizing radiation.

If any of these programs apply to your work area or work activities, you must be familiar with their Laboratory-specific requirements.

Industrial Safety Programs

The following industrial safety programs are managed by OSH for LANL to help ensure the safety of workers and operations and to minimize property loss:

- electrical safety;
- laser safety;
- explosives safety;
- construction safety;
- machine shop safety;
- pressure safety;
- lockout/tagout;
- cryogenics;
- motor vehicle and pedestrian safety;
- forklift safety;
- crane, hoisting, and rigging safety; and
- research and development firearms safety.

If any of these programs apply to your work area or work activities, you must be familiar with their LANL-specific requirements.

Note: *Because the hazards in your workplace will vary, depending on your specific work activities and work area, you*

may be required to attend one or more safety courses.

Electrical Safety

Electricity is an invisible hazard. Electrical hazards are present in high-voltage power lines, as well as in office equipment such as printers, copiers, and shredders. When you work around electrical equipment, heed the following precautions:

- do not assume that the energy source is too small to hurt you;
- do not assume that equipment is turned off;
- turn off equipment before disconnecting it and before attempting to repair it or remove a jam;
- disconnect equipment by the plug, not by the cord;
- do not use equipment with frayed cords or wires;
- use properly grounded (three-prong) plugs;
- do not “daisy-chain” extension cords or use them in place of permanent wiring;
- do not overload electrical outlets or circuits; and
- keep electrical equipment, electrical outlets, and other power supplies clear of obstructions and away from plants and beverages.

Industrial Hygiene and Safety Responsibilities

Managers and Workers

Supervisors and managers at the Laboratory are responsible and accountable for the protection of workers and the public.

As a worker at LANL, you are responsible and accountable for the safe performance

Industrial Hygiene and Safety

of your work activities and for helping to maintain a safe and healthy workplace.

See the Safety Expectations section of this handbook for your specific safety and security responsibilities.

Industrial Hygiene and Safety Support

Industrial hygienists and safety engineers at LANL provide support in the following areas:

- identifying and evaluating health and safety hazards,

- monitoring workplaces for hazards,
- performing workplace inspections,
- reviewing IWDs,
- reviewing engineering designs,
- recommending and evaluating the effectiveness of hazard controls,
- providing training assistance, and
- keeping managers and workers informed about industrial hygiene and safety standards.

Student Self-Assessment

1. All but one of the following are types of health hazards. The exception is
 - a. chemical
 - b. administrative
 - c. physical
 - d. biological
2. Physical hazards may involve
 - a. physical environment
 - b. hazardous energy sources
 - c. mechanical hazards
 - d. all of the above
3. All but one of the following are unsafe work practices. The exception is
 - a. use of equipment without authorization or training
 - b. failure to use the most expensive equipment
 - c. use of improperly maintained equipment
 - d. failure to follow procedures
4. The severity of a chemical exposure depends on
 - a. concentration or level
 - b. exposure time
 - c. individual susceptibility
 - d. all of the above
5. Of the following hazard control methods, which is the most preferred?
 - a. administrative controls
 - b. PPE
 - c. elimination
 - d. substitution

Answers

5. c
4. d
3. b
2. d
1. b

Lockout/Tagout

In This Section

In General

By using this section and the student self-assessment, you will recognize the basic concepts of lockout/tagout and how it impacts the affected workers.



What You Will Learn

When you have completed this section, you will be able to recognize

- the definitions of lockout, tagout, and affected and authorized workers;
- when a lockout/tagout procedure is being used;
- the purpose of the lockout/tagout procedure and the importance of not attempting to start up or use equipment that is locked/tagged out;
- Laboratory-issued locks and tags;
- your responsibilities regarding lockout/tagout; and
- violations of lockout/tagout procedures, which are serious offenses punishable by disciplinary action up to and including termination.

Lockout/Tagout Lessons Learned

Workers Burned during Boiler Repair

While planning to repair a leaking spindle on a nonreturn valve (check valve) on a high-pressure recirculation pump for a heat recovery boiler, three men were burned, with one worker suffering life-threatening injuries.

The night shift used a work instruction checklist to prepare, isolate, and drain the discharge piping to make the system safe for the incoming day-shift workers to repair the leaking valve. Because of a few minor setbacks during that night's work, the night shift was unable to complete the work instruction checklist, meaning that the boiler was handed over to the day-shift workers partially isolated and partially drained.

During the shift turnover, the night-shift team leader handed over handwritten instructions to the day-shift team leader and made sure to explain that the boiler was in a partially isolated state. Because the drains of the boiler were still closed, hot condensate remained in the discharge line.

When a day-shift team member went to open the telltale valves, no hot condensate blew out from the valves; however, this day-shift worker was inexperienced and did not note this as a problem. The day-shift team leader performed the same task, also noting that there was no steam or water, and assumed that the discharge line was fully drained. He then completed, signed, and issued the permit for work.

After the permit for work was issued, two contractors began the process of breaking the pressure seal on the leaking nonreturn valve. Suddenly, hot condensate escaped from the seal and engulfed both men. One worker was able to escape the area. The second worker sustained substantial burns. A witness to the event went to the aid of the second contractor and also sustained burns because he refused to leave his colleague.

Lockout/Tagout

Because of the failure to follow lockout/tagout procedures to prevent the harmful release of energy, the failure to completely drain the discharge lines, and a lack of communication between workers, three workers were burned, with one worker suffering life-threatening injuries.

What Was Learned

- Always reinforce clear and complete written and verbal communication, especially between shift changes.
- Thoroughly review all shift hand-over documents to verify the status of work.
- If in doubt about any component of a job task, stop and ask the supervisor or manager.

Purpose of Lockout/Tagout

What Is the Purpose of Lockout/Tagout?

Lockout/tagout prevents injury caused by the unexpected startup of a machine or the release of hazardous energy while workers are repairing equipment. Every year people are injured, maimed, and killed in accidents either because they failed to isolate the energy source of machinery they are working on or because a fellow worker has restarted equipment, not knowing anyone was in harm's way.

The OSHA standard requires the use of procedures for isolating machines or equipment from their energy source before work is performed on the machine or equipment. These procedures include the placement of locks and tags to prevent the unexpected energization, startup, or release of stored energy that could hurt employees who are working on equipment, machines, or systems.

The Energy Control program is presented in P101-3, *Lockout/Tagout for Hazardous Energy Control*, which requires the use of

locks and tags. Tags alone are unacceptable, except in certain circumstances.

You must complete lockout/tagout training before you are authorized to execute lockout/tagout. Discuss this issue with your supervisor.

Lockout/Tagout at the Laboratory

Definitions

Lockout—The placement of a lock and tag by an authorized worker on an energy-isolating device in accordance with P101-3 to ensure that the equipment being controlled cannot be operated until the lock is removed.

Tagout—The placement of a tag on only the device that controls the equipment, indicating that the equipment must not be operated until the tag is removed.

Affected worker—Anyone who operates, uses, or works near equipment, machinery, or systems that are being serviced, maintained, or modified and that require lockout.

Authorized worker—Anyone who locks out and/or tags out equipment to perform servicing or maintenance on that equipment or to prohibit the operation of equipment that could pose a danger. Authorized workers must complete lockout/tagout training and be authorized by their RLM. Authorized workers may also be affected workers.

Who Conducts Lockout/Tagout Procedures?

Authorized workers conduct lockout/tagout procedures. These workers are appointed by line managers to service or maintain equipment, machinery, or systems and are trained in accordance with P101-3.

Lockout/Tagout

Why Is Lockout/Tagout Important to You?

Anyone whose work is interrupted or otherwise affected by lockout/tagout is an affected worker. If you use a machine on which service or maintenance is performed under lockout/tagout or if you work in an area in which such service or maintenance is performed, you are an affected worker.

Regardless of your job at LANL, your work may require you to enter an area in which tags, with or without locks, are being used. Your entry into one of these areas will make you an affected worker. Your awareness of lockout/tagout procedures will help prevent workplace injuries.

DO NOT

- attempt to remove or alter locks or tags or
- attempt to restart or reenergize machines or equipment that is locked or tagged.

Required Training

To be a lockout/tagout authorized worker, you must complete hands-on classroom training.

Use of Locks and Tags

Equipment That Can Be Locked Out

Locks and tags can be found on circuit breakers, on/off switches, or valves or on any device that turns off or secures a source of energy. For example, a lock and tag might be found on the circuit breaker in your building, on the power switch of a band saw, or on the valve of a sprinkler system.

Types of Hazardous Energy

Electricity is not the only type of hazardous energy. Other types of energy include mechanical, hydraulic, pneumatic, chemical, radiological, and thermal.

Types of Locks and Tags Used at the Laboratory

Red locks and multiple-lock lockout devices are used with red tags that read DANGER—DO NOT OPERATE. These red locks and red tags are the only such devices allowed for use at LANL for the control of hazardous energy. Using these locks and tags prevents injuries while authorized workers are maintaining equipment, machines, or systems. When you see a red tag, normally you will see it on a red lock and attached to an energy control device, such as a valve or a switch. That red lock/red tag is there to protect someone's life. Do not tamper with the lock. If you see locks of different colors, treat them the same as you would a red lock.

Your Responsibilities for Lockout/Tagout

As an affected worker, you must

- be able to recognize Laboratory locks and tags;
- never attempt to operate machines, equipment, or systems that are tagged or tagged and locked; and
- never remove or attempt to bypass locks and/or tags that have been placed on machines, equipment, or systems.

You must recognize and observe your responsibilities for lockout/tagout for your own safety, as well as the safety of your coworkers.

Violations of Lockout/Tagout Procedures

Ignoring lockout/tagout procedures has serious consequences for you and your coworkers. Any violation of a lockout/tagout procedure is subject to disciplinary action, up to and including termination. Call OSH-ISH at 606-0295 if you have questions about lockout/tagout.

Student Self-Assessment

1. Lockout/tagout procedures are used to prevent
 - a. injuries caused by the unexpected release of hazardous energy
 - b. the unexpected startup of equipment or devices
 - c. access to restricted areas after hours
 - d. both a and b
2. Your responsibilities as an affected worker for lockout/tagout include
 - a. being able to recognize Laboratory locks and tags
 - b. removing all locks and/or tags
 - c. maintaining a supply of locks and tags
 - d. operating equipment that has been locked and/or tagged out
3. All but one of the following statements about lockout/tagout are true. The exception is that lockout/tagout
 - a. is used to protect workers from dangerous situations in the workplace
 - b. applies only to electrical systems
 - c. prevents workers from operating equipment that could be hazardous
 - d. should be used during any servicing or maintenance of machines that can release stored energy
4. An affected worker is someone who
 - a. is appointed by a line manager to service or maintain equipment and apply locks and tags
 - b. has work that is interrupted or otherwise affected by lockout/tagout
 - c. is authorized to remove locks and tags
 - d. is authorized to operate machinery, equipment, or systems that are locked and tagged out

Answers

1. d
2. a
3. b
4. b

General Employee Radiological Training



In This Section

In General

Using this section and the student self-assessment, you will recognize basic radiological principles and terms, radiological hazards, the risks of exposure to ionizing radiation, and radiological controls.



What You Will Learn

When you have completed this training, you will be able to recognize

- basic radiological terms,
- sources of background ionizing radiation,
- the biological effects of ionizing radiation and the risks of exposure,
- how to report a pregnancy,
- radiation dose limits for occupational exposure,
- methods used to monitor workers' radiation doses,
- the as-low-as-reasonably-achievable (ALARA) concept and the ways to decrease radiation dose,
- the different radiological controls and postings,
- managers' and workers' responsibilities for radiological protection, and
- emergency procedure information.

Radiological Control Program

Required Training

General Employee Radiological Training is required by 10 CFR 835, *Occupational*

Radiation Protection. As part of a radiological control program, this training introduces the general employee to radiological hazards and risks of exposure and the controls used to protect against them.

Information about Radiological Control

Information about radiological control at the Laboratory is available from the following groups:

Radiation Protection Programs (RP-PROG)	7-7171
Radiation Protection Services (RP-SVS)	5-6064

Radiation Protection Programs

RP-PROG

- provides institutional radiological protection programs, procedures, and standards;
- provides subject matter experts (SMEs) and support in coordination with ESH Deployed Services (DSESH); and
- performs radiological engineering design and design review.

Radiation Protection Services

RP-SVS

- analyzes samples of radiological materials,
- repairs and calibrates radiation/contamination survey instrumentation, and
- distributes and processes external radiation dosimetry.

ESH Deployed Services (DSESH)

- DSESH provides operational radiological protection support.

P121, Radiation Protection

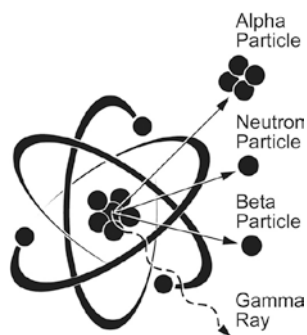
This document provides implementing requirements for the Laboratory Radiation Protection Program, which is mandated by 10 CFR 835, *Occupational Radiation Protection*.

Radiological Terms

Definitions

Radiation—energy in the form of particles or waves. The fundamental unit of matter is the atom.

Radiation is energy in the form of particles or waves.



Atoms contain three basic particles: protons, neutrons, and electrons. Certain combinations of neutrons and protons result in a stable atom. Too many or too few neutrons for a given number of protons result in an unstable (radioactive) atom. An unstable atom releases excess energy in the form of particles or waves.

Radioactivity—the physical property, or capability, of certain atoms to emit radiation as they decay (disintegrate). These radioactive atoms can be either naturally occurring or manmade.

Nonionizing radiation—radiation that does not contain enough energy to strip electrons from atoms. Examples of nonionizing radiation include microwaves, radio waves, and visible light.

Ionizing radiation—radiation that contains enough energy to strip electrons from atoms. Examples of ionizing radiation include alpha, beta, neutron, and gamma or x-ray.

This section is concerned only with ionizing radiation. For information on nonionizing radiation, see the Industrial Hygiene and Safety section of this handbook.

Ionization—the process of stripping an electron from an atom, resulting in a charged atom called an ion.

Radioactive contamination—radioactive material in an undesirable location, such as outside the glovebox or hood in which it is being handled; in homes or offices; or in the soil, air, or other areas of the environment.



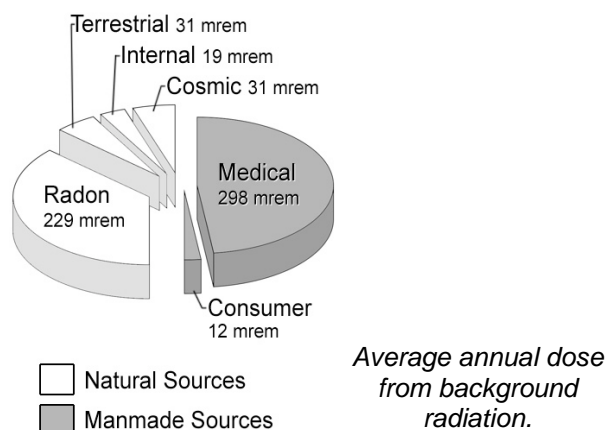
External exposure to radiation alone does not result in contamination of the person. Radiation is a type of energy; contamination is a material that emits radiation. For example, radiation is like the heat you feel from a campfire; contamination is like glowing embers from the campfire landing on your clothes. Receiving a medical or dental x-ray is another example of external exposure; you do not become contaminated by x-rays.

Radiation dose—the amount of energy from ionizing radiation that a person absorbs from both external and internal sources.

Radiation dosimetry—the measurement of a radiation dose. A radiation dose is reported in rems or millirems (mrems), which is the unit of measurement that takes into account biological damage to the human body.

Background Radiation

Background Radiation and Its Sources



Background radiation is both naturally occurring and manmade in the environment. The average nationwide dose from background radiation is about 620 mrem per year.

In Los Alamos, the background dose averages about 700 mrem per year because of the higher altitude and radon levels (reported in *Environmental Surveillance and Los Alamos during 2008*, LA-14407-ENV, September 2009).

Naturally Occurring Background Radiation

Naturally occurring background radiation comes from

- cosmic rays from the sun and stars—the thinner atmosphere at higher altitudes provides less shielding from cosmic rays;
- radioactive materials in the earth—uranium, thorium, and radium are found in soil, rocks, and water;
- radioactive materials in the body, such as potassium-40, which occurs naturally in foods; and

- radioactive materials in the air—for example, radon gas, which comes from the decay of uranium and thorium, is present in the air and can travel through the soil and collect in the home.

Cigarette smoking (one pack a day) contributes an additional annual dose of about 1300 mrem from breathing naturally occurring radioactive particles that are found on tobacco.

Manmade Background Radiation

Manmade background radiation comes from

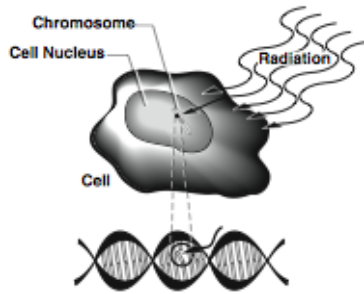
- medical procedures, such as dental and chest x-rays, diagnostic tests, and radiation therapy;
- consumer products, such as building materials, older luminous-dial watches, and smoke detectors; and
- industrial uses, such as radiography or soil density meters.

Risks of Exposure

Biological Effects

Radiation causes damage to any material by ionizing the atoms in the material. Radiation damage to the human body begins with ionization of the atoms that make up human cells. Cells make up the tissues of the body. Tissues make up the organs of the body.

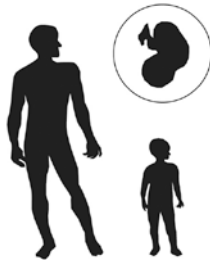
The ionization of atoms in a human cell can cause chemical changes that, if not repaired, can result in biological damage to the cell. If the damage is great enough, the cell will die. Lesser damage to the cell's nucleus can alter the cell's chromosomes.



Radiation damage to a cell.

Types of Effects: Somatic and Heritable

The effects of radiation damage may appear in the exposed person or may theoretically be passed on to the children of the exposed person.



Effects that appear in the exposed person are called **somatic effects**. Effects that appear in the children of the exposed person are called **heritable effects**.

Risk Factors

The risks of exposure to radiation depend on

- the type of radiation,
- the dose received,
- the period over which the dose is received, and
- the part of the body that received the dose.

Chronic Exposure

Chronic exposure occurs when a dose of radiation is received over a long period, typically from months to years. A chronic, low-level dose is usually less harmful than an acute dose because the body has time to repair or replace damaged cells. The effects, if any, of chronic, low-level exposure may not appear until years after exposure. Examples of chronic, low-level exposure are

- the dose received from background radiation, and
- the dose typically received from occupational exposure.

A somatic effect from chronic, low-level exposure may be a slight increase in the risk of developing cancer. The exact increase in the risk of cancer is not known. The increase in risk at occupational levels of exposure is too small to measure and must be estimated based on individuals who have received very high exposures.

No heritable effects in children of exposed persons have been observed in populations that have been clearly linked to chronic, low-level exposure.

Acute Exposure

Acute exposure occurs when a dose of radiation is received in a short period—typically from seconds to days. An acute, high-level dose causes physical effects because the body cannot repair or replace cells fast enough. Most effects from acute, high-level exposure appear within minutes to weeks, depending on the dose received. Examples of acute, high-level exposure are

- the localized dose received during medical radiation therapy and
- the whole-body dose received by atomic bomb survivors.

Effects from acute, high-level exposure result from doses many times greater than occupational limits allow.

Risks of Prenatal Exposure

Prenatal Effects of Exposure

The embryo/fetus is especially sensitive to radiation because cells of the embryo/fetus are dividing rapidly. The degree and kind of



General Employee Radiological Training

radiation damage are dependent on the stage of development of the embryo.

High doses of radiation can result in miscarriage, a low birth weight, mental retardation, birth defects, and an increased risk of developing cancer and other diseases.

Because the effects of low doses of radiation are not precisely known, it is wise to avoid any unnecessary radiation exposure during pregnancy.

Reporting a Pregnancy

If you are pregnant or are considering becoming pregnant and have the potential for exposure to radiation in the workplace, you are encouraged to notify Occupational Health (OH), MS D421, in writing. This declaration is voluntary and may be revoked at any time by the declared pregnant worker.

Once a female worker submits a written declaration of pregnancy with OH, she is considered to be a declared pregnant worker. The Reproductive Health Assistance Program (RHAP) will evaluate your work situation to determine if your job tasks must be modified to minimize exposure and will provide the option of a reassignment of job tasks.

Your Rights Are Protected

You are protected from discrimination by Title VII of the Civil Rights Act of 1964, as amended, while you are reassigned to tasks in which exposure to occupational radiation is unlikely.

Risks in Perspective

Comparing Occupational Exposures

The average radiation dose received from occupational exposure by DOE employees and site workers is 63 mrem per year. The following chart compares this amount with

the average radiation doses received by workers in other occupations.

These occupational doses are calculated in addition to background radiation doses.

Average Occupational Radiation Dose	
Occupation	mrem per year
DOE employees and site workers (radiological work activities)	63
medical personnel (patient diagnosis/treatment)	70
nuclear power plant workers (radiological work activities)	300
airline flight crew members (cosmic radiation)	400–600

(Reported in DOE-HDBK-1131-2007.)

Comparing Health Risks

Health risks can be evaluated by comparing the average days of life lost due to health risks of various occupations. The health risks of occupational radiation exposure are very low when compared with other occupational health risks.

The following chart compares the average number of days lost to workers in several occupations with the average number of days lost from continuous radiation exposure at 100 mrem per year.

Average Reduction in Life Span	
Occupation or Activity over a 47-Year Span	Days Lost
Agriculture	320
Construction	227
Transportation/public utilities	160
All industry	60
Manufacturing	40
Radiation worker with a dose of 100 mrem/year (for 70 years)	10

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(Reported by Bernard M. Cohen, "Catalog of Risks Extended and Updated," Health Physics, Vol. 61, No. 3, September 1991.)

Radiation Dose Limits

The DOE Sets Radiation Dose Limits

The DOE sets limits on the maximum radiation dose that workers, visitors, and the public are allowed to receive in a given period as a result of exposure from DOE sites.

Radiation dose limits, set forth in 10 CFR 835, are based on guidance from the International Commission on Radiological Protection, the National Council on Radiation Protection and Measurement, and the Environmental Protection Agency (EPA).

The DOE's annual radiation dose limits are listed in the following chart. These limits are calculated in addition to background radiation doses and include both external and internal doses.

DOE Annual Radiation Dose Limits		
Affected Personnel	DOE Dose Limits	
Radiological worker	5 rem/yr	5000 mrem/yr
Embryo/fetus	0.5 rem	500 mrem
Visitors and public	0.1 rem/yr	100 mrem/yr

Monitoring Radiation Dose

Radiation Detection and Dosimetry

At the Laboratory, special detection and dosimetry devices are used to detect radiation and radioactive material. If you work on, with, or near radioactive material or radiation-generating devices, you must be monitored regularly to determine the radiation dose you have received in the workplace.

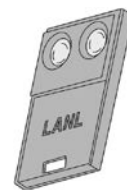
Enrolling in a Monitoring Program

To enroll in the appropriate monitoring program(s), go to the Laboratory's homepage, roll over Safety, click Radiation Protection, select Worker Dose & Dosimetry, and follow the instructions.

If you change job assignments or locations, update your dosimetry information by following the online instructions above. To be removed from these programs, contact the RP-PROG External Dosimetry Office at 7-4854, at least 1 week before your departure.

External Monitoring

The thermoluminescent dosimeter (TLD) is the primary device used to measure external radiation dose from sources outside the body. TLDs must be worn between the neck and the waist, with the LANL emblem facing away from the body. Proper care of the TLD, including its identification label, is important to prevent delays in badge processing.



Workers must not travel with LANL dosimeters, unless their use is authorized by RP-PROG at 7-4854. Do not pack dosimeters that were approved for travel in checked luggage. If dosimeters are taken on travel mistakenly, notify RP-PROG promptly.

Internal Monitoring

An internal radiation dose from radioactive material taken into the body is measured by whole-body counting or other bioassay methods, such as urinalysis.

Radiation Dose Reports

Annual reports of measured radiation dose are issued directly to workers who are monitored. Monthly reports for workers who wear TLDs are available in group offices.

The ALARA Program

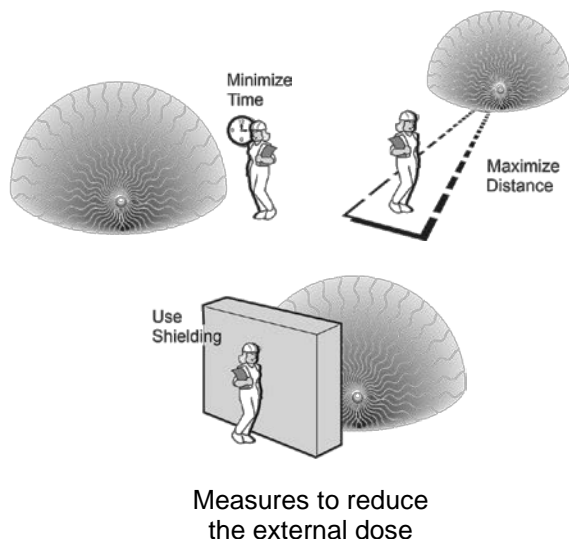
What Is the ALARA Program?

The goal of the ALARA Program is to reduce external and internal radiation exposures to a level that is **as low as reasonably achievable** (ALARA). Management and radiological control personnel establish policies and procedures for the ALARA Program. However, you, the individual worker, are responsible for keeping your personal radiation dose ALARA.

Reducing External Dose

External dose is reduced by the following basic protective measures:

- minimizing time spent near the source of radiation,
- maximizing distance from the source of radiation, and
- using shielding between the body and the source of radiation.



Reducing Internal Dose

Internal dose is reduced by the following control methods that keep radioactive materials from entering the body through the lungs, mouth, or skin:

- engineering controls (gloveboxes, hoods, and ventilation systems);
- administrative controls [work control procedures, radiological work permits (RWPs), and work practices]; and
- PPE (coveralls, gloves, booties, hats, and respirators).

Radiological Controls and Postings

Controls and Postings for Protection

In support of the ALARA concept, LANL uses various radiological controls to protect workers from exposure to radiation.

All areas, materials, and machines that are controlled for radiological purposes are identified by posted signs, tags, or labels, combined with physical barriers where appropriate.



The standard radiation caution symbol (trefoil), with the unique color combination of black or magenta on a yellow background, helps to make radiological hazards easy to recognize.

Recognizing Radiological Hazards

Areas or materials that are controlled for radiological purposes are identified by one or more of the following:

- yellow and black signs bearing the trefoil with the appropriate radiological control information, posted at areas where radiological hazards exist;
- black or magenta on yellow tags and labels bearing the trefoil that identify specific radiological hazards within an area controlled for radiological purposes;
- yellow and magenta ropes, tapes, chains, or other barriers that define the boundaries of posted areas; and

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- yellow plastic wrapping or labeled containers, bearing the trefoil, that package radioactive material.



Areas Controlled for Radiological Purposes

Established by DOE in 10 CFR 835, areas controlled for radiological purposes are based on the potential for external radiation exposure and/or the potential for contamination.

At the Laboratory, signs for these areas have a black trefoil with black lettering on a yellow background. Specific signs for each area alert workers to the type and/or level of radiation present.

Types of Areas

The following areas are categorized as follows according to their characteristics:

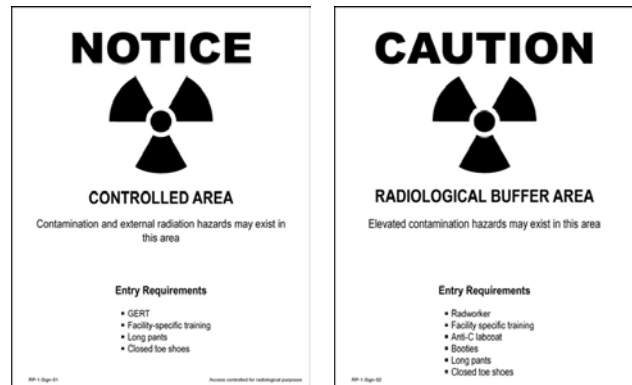
- controlled areas have relatively low radiological risk and controlled access and surround radiological buffer areas or radiological areas;
- radiological buffer areas have a relatively higher radiological risk and controlled access and are boundary areas around radiological areas that contain greater radiological hazards; and
- radiological areas contain identified radiological hazards; these areas include radiation, contamination, and airborne radioactivity areas.

Legacy Controlled Areas

Some controlled areas are posted as legacy controlled areas. When complete historical knowledge is in question or when radionuclides are known to be present, obtain approval from Health Physics Operations before working on or breaching facility systems, surfaces, or equipment.

Radiological Postings at the Laboratory

The following are examples of radiological postings used at the Laboratory.



Precautions required for entry into a radiological area are listed on the posting.

Training Requirements

Training Required for Different Areas

Specific training is required to enter (without a qualified escort) different areas controlled for radiological purposes. The DOE divides the workforce into general employee and radiological worker categories.

The following table lists the type of training required for unescorted entry into specific areas.

Additional entry requirements may exist for access to areas controlled for radiological purposes. Additional facility-specific training may be required at individual facilities at the Laboratory.

General Employee Radiological Training

DOE-required training . . .	allows unescorted entry into a . . .
General Employee Radiological Training	<ul style="list-style-type: none">• Controlled Area
Radiological Worker I Training*	<ul style="list-style-type: none">• Controlled Area• Radiological Buffer Area• Radiation Area• High-Radiation Area
Radiological Worker II Training	<ul style="list-style-type: none">• Controlled Area• Radiological Buffer Area• Radiation Area• High-Radiation Area• Very-High-Radiation Area• Contamination Area• High-Contamination Area• Airborne Radioactivity Area
* LANL offers General Employee Radiological Training and Radiological Worker II training programs. Radiological Worker I training is a subset of Radiological Worker II training.	

Managers' Responsibilities

Laboratory managers must

- help ensure that radiation doses received by workers, visitors, and the public are kept ALARA;
- determine which workers require dosimetry;
- identify radiological workers;
- ensure that their workers have completed appropriate radiological safety training; and
- establish radiological control programs at their facilities.

Your Responsibilities

You are responsible for keeping your personal radiation dose ALARA. You must

- obey all radiological signs and postings;
- follow all radiological and safety rules and procedures, including IWDs and RWPs;
- enter areas controlled for radiological purposes only if properly trained or escorted and only when necessary for your work;
- use ALARA techniques to reduce dose;
- report unusual radiological situations to your supervisor and the radiological control technician (RCT) assigned to your work area;
- be aware of emergency procedures for your work area; and
- refresh General Employee Radiological Training every 24 months, unless you upgrade to Radiological Worker Training.

For more information on your rights and responsibilities, see P121, *Radiation Protection*.

Emergency Information

Nuclear Criticality Safety

Some kinds of plutonium and uranium are called fissile materials. This term means that if concentrated in a solution or brought closely together as solids in sufficient quantity, they can immediately release large amounts of radiation. If this situation occurs in an uncontrolled environment, a criticality accident results.

A criticality accident can cause injury or death to individuals in the immediate area from an acute, high-level dose of radiation but typically does not cause a physical explosion or equipment damage. A criticality accident is a very localized event.

General Employee Radiological Training

The control of fissile materials to prevent such accidents is called nuclear criticality safety. The Nuclear Criticality Safety (NCS) Division provides nuclear criticality safety expertise to all Laboratory facilities where plutonium and uranium are handled.

If your job assignment involves working with or near fissile materials, you will receive additional training on nuclear criticality safety.

Information Specific to Facilities and Work Areas

Emergency procedures and alarms at the Laboratory vary for different facilities and work areas. You should know

- the emergency procedures specific to your work area,
- the warning sirens or alarms specific to your work area, and
- how to contact the RCT assigned to your work area.

In an emergency, call 911.

Student Self-Assessment

1. Radiation that strips electrons from atoms, resulting in the production of ions, is called
 - a. excitation
 - b. microwave radiation
 - c. ionizing radiation
 - d. an isotope
2. External exposure to radiation
 - a. can be detected with the human senses
 - b. does not result in contamination of the worker
 - c. can be reduced by wearing proper dosimetry
 - d. causes higher birth weights in babies
3. All but one of the following contributes to naturally occurring background radiation. The exception is
 - a. radon gas in the air
 - b. cosmic rays from the sun and stars
 - c. medical radiation therapy
 - d. uranium in the soil
4. The maximum radiation dose a visitor to the Laboratory or a member of the public is allowed to receive annually is
 - a. 100 mrem
 - b. 5 rem
 - c. 50 rem
 - d. 15,000 mrem
5. ALARA means keeping radiation dose
 - a. as long as reasonably acceptable
 - b. as long as radiation is around
 - c. as low as radiology allows
 - d. as low as reasonably achievable
6. To reduce external radiation dose you should
 - a. maximize time, minimize distance, and use shielding
 - b. minimize time, maximize distance, and use shielding

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- c. use PPE
 - d. remove radiation signs that you think are not necessary
7. Laboratory signs for areas controlled for radiological purposes are
- a. yellow and white
 - b. magenta and white
 - c. magenta and black
 - d. yellow and black
8. Completing General Employee Radiological Training allows unescorted entry into a
- a. Radiation Area
 - b. Controlled Area
 - c. Contamination Area
 - d. all of the above
9. Emergency alarms at the Laboratory
- a. are specific to each facility and work area
 - b. are consistent throughout the Laboratory
 - c. do not include fire alarms
 - d. are used if you have torn protective clothing

Answers

- a. 6
- b. 8
- c. 7
- d. 9
- a. 5
- b. 4
- c. 3
- d. 2
- c. 1

Fire Protection



In This Section

Fire Protection Overview

Fire is the third leading cause of accidental death in the US. More than 70 workplace fires occur every day, yet most people fail to prepare for the possibility of a life-threatening fire. LANL is required to comply with the National Fire Protection Association's (NFPA's) codes and standards. Statistics have shown that complying with these codes and standards has greatly reduced the loss of life and property to fire incidents.

When you have completed this section, you will be able to recognize

- that fire prevention is encouraged in your daily work activities,
- that your first responsibility during a fire is to protect yourself,
- that you should know the sound of the fire alarm in your building,
- the steps to follow if a fire occurs,
- training requirements for using a portable fire extinguisher,
- that you should be familiar with your building emergency plan,
- building evacuation steps, and
- what to do if you are trapped in a burning building.

LANL is surrounded by a pine forest that is very vulnerable to fire during dry, windy seasons. The 150,000-acre Las Conchas Fire of 2011 destroyed 63 homes southwest of Los Alamos County and threatened Laboratory property and the town of Los Alamos. Be careful when throwing away

any lighted materials, such as matches, cigarettes, and ashes. Report any fire hazards, such as trash piles and overgrown brush near a building, to your facility manager.

If You Have Questions

If you have questions or need more information on fire protection,

- read PD 1220, *LANL Fire Protection Program* (available online from the Laboratory's homepage), and/or
- call the Fire Protection Division office (FP-DO) at 7-9045.

Classifying and Preventing Fires

How Fires Are Classified

Fires are classified by the type of material burning. An important part of fighting fires is knowing the five classes of fires:

- Class A: ordinary combustibles, such as wood, cloth, paper, rubber, plastic, and other common materials;
- Class B: flammable or combustible liquids, such as gasoline, kerosene, paint, paint thinner, and propane;
- Class C: energized electrical equipment, such as appliances, switches, panel boxes, and power tools;
- Class D: certain combustible metals, such as lithium, magnesium, potassium, sodium, titanium, and uranium; and
- Class K: combustible cooking media, such as cooking oils, fat, and grease commonly found in commercial kitchens.






Fire Protection

The appropriate type of fire extinguisher must be used to fight a fire. A Class-A fire extinguisher can be used to fight only a Class-A fire. A Class-ABC fire extinguisher can be used on an A, B, or C fire. A Class-K extinguisher must be used to fight a Class-K fire.

Fire Prevention

As part of ISM, the Laboratory encourages fire prevention in your daily work activities. Different strategies must be used to prevent different classes of fires. Include the following fire prevention methods in your daily work activities.

For detailed information about the materials with which you work, consult the safety data sheets (SDSs – previously known as MSDSs) available in your work area.

CLASSES OF FIRES	TYPES OF FIRES	PICTURE SYMBOL
A	Wood, paper, cloth, trash & other ordinary materials.	
B	Gasoline, oil, paint and other flammable liquids.	
C	May be used on fires involving live electrical equipment without danger to the operator.	
D	Combustible metals and combustible metal alloys.	
K	Cooking media (Vegetable or Animal Oils and Fats)	

Class A: Ordinary Combustibles

- Keep stairways, corridors, equipment rooms, offices, and work areas free of

combustibles, such as trash, wood or paper, and cardboard boxes.

- Place oily rags in approved, covered containers to avoid spontaneous ignition.

Class B: Flammable and Combustible Liquids or Gases

- Do not refuel gasoline-powered equipment if you are near an open flame, such as a furnace or water heater.
- Do not refuel gasoline-powered equipment while the equipment is hot or the power is on (such as leaving the motor running while filling the gasoline tank).
- Use flammable liquids or gases only in well-ventilated areas.
- Keep only a working supply of flammable materials on hand. Store excess materials in approved containers and/or cabinets.
- Store flammable liquids in approved, tightly closed or properly vented, spill-proof containers.
- Do not store flammable liquids or gases on stairways, in corridors, or in equipment rooms.

Class C: Electrical Equipment

- Replace old wiring, worn insulation, and broken electrical fittings.
- Prevent motors from overheating by keeping them clean and in good working order. Keep combustibles away from motors.
- Use extension cords on a temporary basis only.
- Avoid running extension cords where they may be damaged by foot or vehicle traffic.

Class D: Combustible Metals

- Know whether the metals you use are combustible, such as sodium or lithium.
- Store materials in a way that keeps combustible metals from igniting. For example, pure sodium in contact with water will ignite.
- Store combustible metals in approved containers.

Although lithium and lithium hydride are Class-D combustible metals, only portable fire extinguishers specifically labeled Lith-X or Graphite must be used to put out fires involving these metals.

Class K: Cooking Oils

- Never leave cooking unattended.
- Maintain appropriate cooking temperatures.
- Regularly clean grill surfaces and other cooking areas.
- Understand the fire safety procedures for your workplace.
- Never throw water on a grease fire.

Class-K fire extinguishers are specifically formulated to be effective for cooking-oil fires and are to be used as a supplement for kitchen fire suppression systems.

What You Need to Know before a Fire Occurs

Your First Responsibility Is to Protect Yourself

At LANL, your first responsibility during a fire is to protect yourself. The information in this section supports this principle and may save your life in the event of a fire.

Building Emergency Plans

Most buildings have emergency plans. Be sure you know

- the sound of alarms in your facility,

- the emergency procedures for evacuation,
- the evacuation routes and exits for your building,
- the locations of manual alarm pull-boxes, and
- the location of the assembly area for your building.

See the Emergency Management section of this handbook for more about building emergency plans.

Steps to Follow during a Fire

You should know the steps to follow if a fire occurs.

1. Pull the manual fire alarm.
2. Call 911 (provide your TA and building numbers).
3. Evacuate the building, and report to your assembly area.



If you are at risk in trying to get to a pull-box or in calling 911, evacuate first and then find a safe location to call 911 and (if possible) pull the alarm.

Fighting a Fire

Fire Extinguisher Use

In most cases, the Laboratory requires building evacuation in the event of a fire. However, a worker who is familiar with or trained in the use of portable fire extinguishers may choose to, but is not required to attempt to extinguish a small fire.

The information in this section will make you familiar with portable fire extinguishers and their use. If you are assigned a job duty that requires you to use a fire extinguisher, you will receive training in the use of

Fire Protection

portable fire extinguishers, including hands-on instruction.

Training is provided by the Institutional Training Services Group (ITS). Call 7-0059 or register online from the LANL homepage (click on UTrain within the Top Tools list).

You must not attempt to extinguish a fire unless

- the fire is small and contained,
- you have the correct fire extinguisher,
- you can avoid breathing smoke, and
- you have a clear escape route to your back.

Using Portable Fire Extinguishers

To operate a fire extinguisher, use the pull, aim, squeeze, sweep (PASS) method:

1. Pull the pin: on some extinguishers, release a lock latch or press a puncture lever.
2. Aim low: point the nozzle at the base of the fire.
3. Squeeze the handle: squeeze to release the extinguishing agent.



4. Sweep from side to side: sweep back and forth until the fire is out.

Evacuating a Burning Building

If, in your judgment, the fire cannot be put out with a portable fire extinguisher, evacuate the building and report to your assembly area. Roll call will be taken to ensure that everyone is out of the building.

When you evacuate a burning building, take the following precautions:

- Never open a door without first putting the back of your hand near the door to sense if it is hot. If the door is hot, try another exit.
- If you are the last one out of a room, close the door but do not lock it. Locking the door will slow down the fire department's search and rescue efforts.
- Go to the nearest exit.
- Do not use elevators.
- Stay low to avoid smoke and toxic gases. The best air is usually close to the floor, so crawl if you have to.
- If possible, cover your mouth and nose with a dry cloth to filter the air you breathe.



If You Are Trapped in a Burning Building

If you are trapped in a burning building,

- close all doors and seal all cracks around doors and vents;
- if possible, call 911 and report exactly where you are; and
- open a window only if you can escape through it or if you are having difficulty breathing. But be aware that an open window can create a draft and draw smoke and fire toward it.

Student Self-Assessment

1. It is important to know the different classes of fires to
 - a. decide whether to evacuate a burning building
 - b. use the proper portable fire extinguisher
 - c. know how to prevent each class of fire
 - d. both b and c
2. Some precautions to take to prevent fires are
 - a. do not refuel gasoline-powered equipment near open flames or heaters
 - b. do not refuel gasoline-powered equipment while it is hot or the power is on
 - c. store flammable materials in approved containers
 - d. all of the above
3. Building emergency plans include
 - a. evacuation routes and exits
 - b. locations of windows in the building
 - c. emergency procedures for evacuation
 - d. both a and c
4. Laboratory policy states
 - a. do not fight a fire unless told to do so by a coworker
 - b. building evacuation is encouraged in the event of a fire
 - c. workers familiar with or trained in the use of portable fire extinguishers may use them on small fires that can be put out safely
 - d. both b and c
5. Choose the correct portable fire extinguisher by
 - a. the size of the extinguisher
 - b. the color of the extinguisher
 - c. the rating shown on the faceplate of the extinguisher
 - d. the nozzle on the extinguisher

Fire Protection

6. PASS stands for
- a. point, aim, start, stop
 - b. pull, aim, squeeze, sweep
 - c. pass, act, survey, squeeze
 - d. pin, act, squeeze, stop
7. If evacuation of a burning building is necessary,
- a. close the door behind you, but do not lock it
 - b. do not use elevators
 - c. stay low to avoid smoke or toxic gases
 - d. all of the above

Answers

- p. 7
- q. 9
- c. 5
- p. 4
- p. 3
- p. 2
- p. 1

Security



In This Section

In General

Using this section and the student self-assessment, you will recognize the personnel, information, computer, and physical security programs at the Laboratory; your responsibilities for security; the controls used to safeguard nuclear materials; and classification terms.



What You Will Learn

When you have completed this section, you will be able to recognize

- the organization responsible for security at the Laboratory;
- elements and proper use of your security badge;
- your security responsibilities;
- that the Laboratory is a drug-free workplace;
- why and how nuclear materials are safeguarded;
- the difference between classified and controlled unclassified information;
- the levels and categories of classified information;
- what you must do before using a Laboratory computer; and
- that hostile intelligence threats, foreign contacts, and travel to sensitive countries must be reported.

Security Organization

Introduction

The Associate Directorate for Mission Assurance, Security, and Emergency Response (ADMASER), including the protective force (PF), is here to enable the Laboratory to achieve its national security and science missions. It is responsible for preventing and neutralizing threats to the Laboratory.

ADMASER's mission is to protect LANL's special nuclear material, property, information, and personnel. ADMASER provides expertise, support, and guidance in all areas of security and safeguards—from classification to personnel security, and especially nuclear material control and accountability.

You can access more information about the services and groups within ADMASER by going to the Directorate homepage.

Security Help Line

For answers to security-related questions contact the Security Help Line at 5-2002 or security@lanl.gov.

Protective Force

LANL has a PF that provides security for LANL. The various levels of PF personnel include security officer, security police officer, and security police officer III, who are members of the Special Response Team. PF officers can be seen wearing and carrying a wide variety of equipment, including tactical vests, radios, weapons belts,

and military-style uniforms. All PF officers are authorized to carry cellphones, pagers, and tactical radios.

Your Security Requirements

Each worker is required to participate fully in the Laboratory's security programs. Security requirements for all Laboratory workers are accessible online from LANL's homepage under Security.

Your Security Badge

Getting and Using Your Badge

All workers at the Laboratory are issued security badges before reporting to work. Follow these rules about your badge:

- Wear your badge at all times while on Laboratory-owned or -leased property. Do not wear your badge when off Laboratory property, and do not leave your badge where it might be stolen.
- Wear your badge above the waist, on the front side of the body, with the photograph visible.
- Do not use your badge for unofficial identification, such as for cashing checks. (You may use your badge as identification for official Laboratory purposes, but never allow anyone to make a photocopy or take a photo of your badge.)
- Keep your badge safe from damage.
- Your badge is the property of the US government. You must return your badge to the Badge Office when you change Laboratory employers; your clearance level changes; your badge expires; or you quit, retire, or no longer need your badge.

If You Lose Your Badge

If your badge is lost during work hours, report it in person to the Badge Office. If your badge has been stolen, report it immediately to the Badge Office, your deployed security officer, or the Security Incident Team at 5-3505.

If You Forget Your Badge

If you forget your badge, you may receive a temporary badge after presenting proper identification at the Badge Office.

A temporary badge will be issued only twice in a 12-month period. Your manager's approval is required if an additional temporary badge is needed.

Access

Access to buildings and classified material is limited by your clearance level, as shown in the following table.

Clearance Level	Access
Uncleared	Open areas only; unclassified information only
L Cleared	Security area where work will be done; highest access is Secret/Formerly Restricted Data
Q Cleared	Security area where work will be done; highest access is Top Secret/Restricted Data

Federal Security Badges

The federal security badge, issued to those with an L or Q clearance, also incorporates an integrated circuit chip, which stores limited personal information about the badge holder, such as a personal identification number (PIN), electronic fingerprints, and a digital image.

Protecting Your Privacy

The federal security badge is issued with an electromagnetically opaque sleeve that protects the badge. It also protects the badge's integrated circuit chip from being pinged or accessed without proper authorization. Unless you are showing the badge to a PF officer or swiping it through a badge reader, chipped badges must be kept in the supplied protective sleeve at all times.

Protecting the Badge

Workers should take the following protective measures:

- Do not mark on, punch holes in, or bend the badge.
- Do not scratch the magnetic strip on the badge.
- Do not use the badge as a window scraper.
- Avoid subjecting the badge to excessive heat (e.g., clothes dryer) or direct sunlight (e.g., car dashboards).
- Keep the badge away from stereo equipment, speakers, and other sources of magnetic energy.

Entering and Leaving Security Areas

When entering a staffed security post, hand your badge to the PF officer.

You will need to use a badge reader and hand geometry reader (commonly known as a palm reader) or PIN to enter security areas. Property protection areas use badge readers only.

In some areas, you may need to pass through a metal detector. Your purse, coat, briefcase, lunchbox, and other packages may be checked by an x-ray machine or a PF officer.

If a badge reader at the entrance to a security area does not read your badge, it may mean that your security training has expired or another badge/clearance issue needs to be resolved before access is reinstated. Remember, you must keep your security training up to date.

Piggybacking (allowing another individual to enter a facility when you swipe your badge) is not allowed. Each worker must use his or her own badge for area access.



Vehicle Access Requirements

To enter some Laboratory roadways, you will be required to go through a vehicle access portal (VAP).

Entering Vehicle Access Portals

Be aware of the following vehicle access requirements:

- Approach the VAP safely regarding speed, other traffic, personnel on foot, etc.
- Follow the traffic lanes.
- Follow instructional signs.
- If the drop arms are up and the green OPEN sign is illuminated, that lane is open.
- All vehicles must STOP at the portal, and all drivers must present a badge to the officer. DO NOT drive through the VAP without stopping and being authorized to proceed. (If you do not

stop, the PF will pursue your vehicle, stop you, inspect your vehicle, and submit an incident report, and you may be issued a security infraction.)

- After the PF officer has given you verbal or hand signal direction to proceed, you may proceed through the VAP.
- Merge into the main roadway with caution, considering other vehicles in the area that are also exiting and merging.

At the VAPs on Pajarito Road, all individuals must show a valid security badge (Federal Security Badge or LANL site-specific badge issued by the Badge Office). Workers with generic “Visitor” badges (badges not issued directly to a worker by the Badge Office) can be escorted through the Pajarito corridor by a worker who is approved for unescorted access to the corridor with an approved security plan for the work being conducted.

Each PF officer has the duty and obligation to verify the identity of persons entering. You must comply with requests to remove anything that may obstruct your facial features, such as helmets, hats, scarves, or sunglasses. Vehicle access requirements may change according to the security condition. Please go to the Security website for more information on VAP requirements.

Interacting with PF Officers

When a PF officer directs a Laboratory worker to perform an action (especially in emergency situations), the LANL employee must follow directions. Arguing, inappropriate language,



offensive hand gestures, resisting, or interfering with officers in the discharge of their duties will not be tolerated. Officers conducting security duties at the scene of an emergency are not obligated to respond to questions, offer explanations, or justify their instructions. Although officers are trained to be courteous, they are also trained to take control of any situation, and they will do so when necessary.

Your Security Responsibilities

Personal and Vehicle Inspections

While on Laboratory property, you are subject to random personal and vehicle inspections by PF personnel. You may also receive unannounced inspections of your work area by bomb-detecting dogs.

Prohibited Articles on LANL Property

Firearms, dangerous weapons, explosives, incendiary devices, and other instruments or materials likely to cause personal injury or property damage are not allowed on Laboratory property or inside Laboratory-operated facilities, unless they are government property or are specifically authorized. Also not allowed are

- alcohol and illegal drugs and
- any other articles prohibited by law.

The use of Bluetooth is prohibited anywhere on LANL property. LANL has implemented wireless networks that are available in some locations. Contact your OCSR to find out if wireless is available in your work location.

Controlled Articles in Security Areas

Devices that can store, read, write, record, or transmit data are not allowed in security areas, unless they are

government property or are specifically authorized. These articles include

- recording equipment (including audio, video, optical, and data-recording devices);
- cameras (film, digital, video, or still);
- non-government-owned portable electronic devices (including computers, personal digital assistants, iPods, iPads, USB drives, flash memory, medical devices, and ankle monitors);
- cell phones, two-way pagers, and radio-transmitting equipment; and
- wireless devices.

Electronic Devices Used for Surveillance

The following electronic devices pose a security risk if intentionally or unintentionally used as surveillance equipment:

- cell phones,
- radio frequency transmitters,
- pagers,
- wireless devices,
- personal digital assistants (PDAs),
- still and video cameras, and
- other electronic devices.

Cellular Phones

Unlike a traditional telephone, it is not always apparent when a cellphone is on and when it is off. Because of this, cellphones can pose a threat to security. Personal cell phones are allowed only in property protection areas (PPAs) This threat is posed in four significant ways:

- Cellphones can be carried to different locations without much awareness.

- A cellphone maintains contact with its cellular service provider, except when the battery is removed.
- A cellphone can be remotely activated without the user's knowledge.
- Cell phone technology now integrates PDAs, cameras, Internet access, audio/video recording, and other capabilities controlled in secure areas.

If your job requires using a cellphone, the Laboratory will issue you one.

Temporary Storage of Electronic Items

Before entering a secure area, you must turn off your LANL-issued cell phone (or two-way pager) and remove its battery. Privately owned cell phones, two-way pagers, and other transmitters are prohibited in security areas without prior Information Security approval.

Many areas have small lockers set up outside security area access points for securely storing personal electronic devices such as cellphones. Please ask at your facility about locker availability and the requirements for using them.



LANL-Issued Blackberry and iPhone Smartphones

Blackberry and iPhone smartphones issued and configured by LANL and other government agencies with reciprocity agreements are allowed for conditional use in limited areas. If you are issued a Blackberry or iPhone, you

will receive additional training on the rules of use.

Technical Surveillance Countermeasures

Technical surveillance countermeasures (TSCM) is an electronic countermeasures program used to detect and deter espionage, protect against inadvertent disclosure of classified or sensitive information, and protect your privacy at work.

If you take LANL electronic equipment when traveling to foreign countries, you should consult with the TSCM Team before and after travel. All LANL electronics taken to sensitive foreign countries must be examined by the TSCM Team upon your return from travel. If you suspect that you are the target of a technical surveillance device, contact (preferably in person) the TSCM Team from a location away from the suspected targeted area. When requesting assistance, do not indicate the nature of the situation; simply ask to speak to a member of the TSCM Team.

Escorting Uncleared Visitors

Once you have your security clearance, you may need to escort an uncleared US citizen visitor into a security area. You must

- take appropriate training before escorting;
- make sure that uncleared Escort Required badges are issued and returned;
- brief visitors of their responsibilities while in a security area, including those responsibilities regarding prohibited and controlled articles;
- log visitors in and out of security areas;

- ensure that uncleared visitors do not see information and/or overhear discussions that are classified; and
- keep uncleared visitors in sight at all times until you are leaving security areas or turning the visitors over to another authorized escort.

Escorting foreign nationals into security areas is rarely allowed and must be handled by the Foreign Visits and Assignments Team.

Personnel Security Reporting Requirements

Workers who have a security clearance or who are in the process of getting one are required to report the following situations to Personnel Security:

If You Marry or Cohabit

If you marry or cohabit after being granted a Q or L clearance, you must complete a *DOE Data Report on Spouse/Cohabitant* (Form 5631.34) within 45 days.

If You Change Your Name

If you change your name, complete Form 1705, *Name Change Report*, which is available from the Forms Center on the LANL website.

If You Take Extended Leave

If you take extended leave for more than 90 working days, you must notify Personnel Security at 7-7253 as soon as possible.

Reporting Personal Conditions and Events

You must notify Personnel Security within one working day if any of the following occur:

- legal action has been effected for a name change;

- citizenship changes;
- any illegal drug is used, or a legal drug is used in a manner that deviates from approved medical direction;
- any arrests, criminal charges (including charges that are dismissed), citations, tickets, summons or detentions are incurred by federal, state, or other law enforcement authorities for violations of law within or outside the US. Traffic violations for which a fine of up to \$300 was imposed need not be reported, unless the violation was alcohol or drug related;
- an immediate family member is or will be assuming residence in a sensitive country;
- mental health hospitalization or treatment is provided for drug or alcohol abuse;
- employment by, representation of, or other business-related association is made with a foreign or foreign-owner interest or non-US citizen or other individual who is both a US citizen and a citizen of a foreign country;
- filing for bankruptcy that is personal or business related; and/or
- wages are garnished.

Contact Personnel Security at 7-7253 or go to their website for guidance on reporting incidents.

Reporting Theft or Misuse

You must report theft or misuse of government property. To do so, you may notify

- your supervisor;
- your division security officer;
- Internal Inquiries at 5-6159; or
- the ECP at 5-9999 to report waste, fraud, or abuse.

Reporting Security Events

You are required to immediately report any known or potential security incidents to the Security Incident Team (SIT) at 5-3505 and to your RLM. Reports must be made to a person and cannot be e-mailed or left on voice mail. Ensure that potentially classified information is discussed only via secure means.

Sample Incidents of Security Concern

Security incidents can include

- classified information processed on an unclassified computer;
- incorrect transmission of classified matter;
- unauthorized disclosure of classified matter;
- inadvertent disclosure of classified matter;
- unsecured/unattended classified matter and/or container;
- incorrect reproduction of classified matter;
- classified matter that is lost, stolen, or unaccounted for;
- attempts to remove, divert, or obtain unauthorized access to classified matter;
- unauthorized access to classified or unclassified information systems/networks;
- any breach or attempted breach of a security area, access controls, or security system;
- introduction of prohibited/controlled articles into a security area;
- incorrect use of a security badge;

- sabotage of LANL facilities;
- any suspicious or criminal activity; and
- known or suspected cases of technical surveillance.

Maintaining a Drug-Free Workplace

Substance Abuse Policy

The Laboratory is committed to

- providing a safe work environment,
- ensuring public safety, and
- protecting its national security mission.

In support of this commitment, the Laboratory maintains a drug-free workplace. Substance abuse affects worker performance, conduct, and/or reliability and can interfere with the Laboratory mission.

Substance abuse includes the use of illegal drugs and the misuse of alcohol or over-the-counter and prescription drugs.

What This Means to You

- LANL workers are subject to random drug testing.
- You may not work while under the influence of alcohol or drugs.
- You may not possess, sell, transfer, or use illegal drugs on Laboratory-operated property.
- You may use your own legally prescribed drugs, as long as they do not affect your work. (If you are taking an over-the-counter or prescription drug that affects your ability to perform your required work, you should notify your supervisor either directly or through OH.)

- You may not bring or use alcohol on Laboratory-operated property.
- You may be disciplined, up to and including termination, for abusing alcohol or drugs.

Substance-abuse counseling is available through OH. See the Occupational Health section of this handbook for information about the EAP.

Nuclear Material Control and Accountability

Nuclear Materials Worldwide

The US, as well as many other countries, has nuclear material control and accountability (NMCA) programs to control nuclear materials and weapons.

Nuclear Materials at the Laboratory

The DOE and Laboratory NMCA programs are designed to detect and deter the theft and diversion of accountable nuclear materials.

The Laboratory is required to comply with DOE Order requirements governing the use of these materials. These requirements include the completion of appropriate and essential documentation, training of personnel authorized to work with nuclear materials, and periodic assessments of compliance with applicable requirements and regulations.

See PD205, *Nuclear Safeguards*, contact the Nuclear Material Control and Accountability group at 667-5886, or visit their website for further guidance.

Classified Information

Classification

Classification is the process of identifying information that would damage national security if it were released to unauthorized persons. Classification allows for the appropriate protection of information.

Three Levels

Classified information is given a level, as follows:

- top secret,
- secret, or
- confidential.

Classified Information Preserves National Security

When classified information is improperly disclosed, some degree of damage to national security occurs. This damage potential is used to assign the levels of classification.

Three Categories

Classified information is categorized as

- restricted data (RD),
- formerly restricted data (FRD), or
- national security information (NSI).

If you find classified matter in an inappropriate area, notify your RLM or the SIT immediately. Do not leave classified matter unattended or unprotected.

Safe Evacuation Is the First Priority

If your building is evacuated and life or safety is in jeopardy, a safe evacuation is the first priority. You should follow these steps:

- Leave classified matter, computer terminals, storage repositories, and

special nuclear materials as is, and evacuate the area immediately.

- Report any materials or repositories left unattended to your RLM and the SIT.
- When the area is reoccupied, examine and account for the materials and repositories immediately.

Controlled Unclassified Information (CUI)

Categories of CUI

Some information is controlled, even though it is not classified. Some types are

- unclassified controlled nuclear information (UCNI);
- export-controlled information (ECI);
- official use only (OUO), which includes personal/privacy information, company proprietary information, information required by law to be withheld from public release; and
- personally identifiable information (PII), such as social security numbers, date and place of birth, and medical and employment records.

CUI Requires Special Handling

CUI, if released, could help a terrorist gain access to nuclear materials, compromise technology with military or security applications, or compromise administrative or personnel information. Many categories of CUI, when in electronic form, require data encryption when sent or carried offsite. Possible loss of PII must be reported immediately.

Your Responsibilities

If you work with CUI, your RLM will instruct you on the proper procedures for handling it. If you find CUI in an inappropriate area, protect the information and notify your RLM immediately.

Information Security

The goal of the information security program is to protect the confidentiality, integrity, and availability (CIA) of information.

Also referred to as cybersecurity, information security involves

- information – generated, processed, transmitted and/ or stored on the system;
- hardware – the physical parts of the computer itself;
- software – the operating systems and programs;
- media – devices that store information and programs such as magnetic, optical, or solid-state; and
- networks – multiple computers interconnected over various communications lines.

A cyber security incident is any event or threat that affects normal operations of or has an undesirable impact on a computer system and/or computing facility, such as attempted access to computing resources without authorization or contamination of an unclassified system with classified information. Incidents may also include using a computer system in connection with criminal acts, unsanctioned work, or fraud and abuse.

As a Laboratory General User, you are required to participate actively in

information security by following all policies and procedures set forth by DOE and the Laboratory. When you use a Laboratory system, you agree to the terms and conditions of use, including the possibility that your system may be audited, monitored, copied, confiscated, or inspected.

Important Reminders

- Use your system(s) for official purposes while following specific work area rules.
- Protect systems from unauthorized access.
- Follow the Laboratory password policy. Use complex passwords, and never share your password or PIN with anyone.
- Understand and implement required information security protections and mitigations: use anti-malware protection and perform regular backups of information of institutional interest.
- Install only information-architecture (IA)-approved hardware and software.
- Conduct everyday computing activities – logging into your system, reading e-mail or web, or creating a document – using your default General User authority.
- The Laboratory protects personally identifiable information (PII). Immediately report the loss of PII to the Security Incident Team (SIT).
- Be aware of threats to information security, such as insiders and phishing.
- Do not download attachments or click on links in suspicious e-mails, which can lead to malware or

ransomware being installed on your computer.

- Promptly report any suspected information security incidents to the SIT at 665-3505.

If you have any questions, contact the AskIT Service Desk (AskIT):

- phone: 665-4444
- web: askit.lanl.gov
- e-mail: askIT@lanl.gov

You can also contact the following information security representatives for your organization:

- Organizational Computer Security Representative (OCSR)
- Senior Cyber Security Leader and Deployed Security Officer
- Information System Security Officer

Your organization can provide the contact information for these individuals.

Office of Counterintelligence

The mission of the Office of Counterintelligence (OCI) is to protect LANL and its employees from efforts by foreign intelligence services and terrorist groups to acquire sensitive and classified information. OCI is responsible for these programs:

- The Counterintelligence (CI) Program opposes efforts by foreign intelligence services and terrorist groups that try to recruit employees who have access to classified or sensitive information.
- Foreign Visits and Assignments (FV&A) facilitates foreign national visits to the Laboratory. Non-US citizens are not permitted on LANL property without prior approval. For

more information, contact the FV&A office at 5-1572.

- Immigration Services facilitates the employment of international personnel and scientific collaborations.
- Operations Security (OPSEC) is a Laboratory-wide program to ensure that sensitive information is protected from inadvertent and unauthorized disclosure.

Two Threats

The hostile intelligence threat is twofold:

- information obtained about classified programs can be used to damage national security, and
- illegally obtained research and development technology could result in significant loss to the US.

Two Methods

Although intelligence agencies use many collection methods, the two methods that will concern you if you work with classified or sensitive programs at the Laboratory are

- trained information collectors trying to elicit information from you and
- foreign intelligence agents trying to recruit workers in facilities or programs of interest to them.

If You Are Approached

The hostile intelligence threat is real. You could be the target of illegal or unauthorized attempts to gain access to classified or sensitive information, technology, or special nuclear material. Contact the OCI at 5-6090 if you are concerned about CI and/or OPSEC issues. You must report any attempts to breach security.

You Must Report Contacts

You must report all contacts you have—on or off the job—with individuals of any nationality who

- attempt to obtain illegal or unauthorized access to classified or sensitive information or
- may be targeting you for actual or attempted exploitation by a foreign country.

Travel to Sensitive Countries

Any LANL workers who are planning to travel to a sensitive country for pleasure or for business must contact OCI 30 days before they leave. A current list of sensitive countries is available online from the Laboratory's homepage under OCI. Contact OCI at 5-6090 for additional information.

Student Self-Assessment

1. The Laboratory's substance abuse policy applies to
 - a. the misuse of alcohol
 - b. the misuse of prescription drugs
 - c. the use of illegal drugs
 - d. all of the above
2. Who is authorized to work with nuclear material?
 - a. any worker with a Q clearance
 - b. any Laboratory manager
 - c. required, trained personnel
 - d. any worker with an L clearance
3. All of the following are classification levels, except
 - a. secret
 - b. restricted
 - c. confidential
 - d. top secret
4. Controlled unclassified information, if released, could
 - a. compromise personnel information
 - b. help a terrorist gain access to nuclear material
 - c. compromise military technology
 - d. all of the above
5. What should you do if you find unprotected classified information?
 - a. make sure no one else knows about it
 - b. notify your line manager or the SIT immediately
 - c. hide it immediately
 - d. go about your business if you do not have a security clearance

Answers

- 5.b
- 4.d
- 3.b
- 2.c
- 1.d

Emergency Operations



In This Section

In General

Using this section and the student self-assessment, you will recognize LANL-wide procedures for reporting emergencies and your role and responsibilities as a LANL worker during emergency situations.

What You Will Learn

When you have completed this section, you will be able to recognize

- the Laboratory's Emergency Operations program,
- elements of a building emergency plan,
- how to prepare and respond to emergencies,
- your responsibility for reporting emergencies,
- procedures for reporting emergencies, and
- your protective actions.

Emergency Operations Management and Preparedness

Emergency Operations

Emergency Planning and Preparedness serves the Laboratory, DOE/NNSA, and the surrounding community by providing emergency planning and preparedness services to

- minimize or mitigate the consequences of an emergency incident;
- protect the health and safety of workers, the public, and the environment; and

- ensure national security.

Emergency Management

The Emergency Management Group consists of personnel who ensure readiness and operability of the Emergency Operations Center (EOC) and emergency managers who are deployed from the EOC to the incident scene to assume command.



Hazardous Materials Group

The Hazardous Materials Group comprises two highly trained specialty teams. The Hazardous Devices Team is the bomb squad for DOE property. This team investigates and, when necessary, disposes of unclaimed, unattended, or untagged packages and military ordnance. The HAZMAT Team responds to hazardous materials emergencies.

Emergency Operations Center (EOC)

The EOC is staffed continuously day and night. During any event when you need to call 911, you should also call the EOC at 667-6211.

If (9-1-1, (7-6211

Continuity of Operations (COOP)

The Laboratory's COOP Program ensures the performance of mission-essential functions in emergencies that may disrupt normal operations. As a worker, your responsibilities include using established methods, such as phone trees and group e-mail, to report your status to your chain of

Emergency Operations

command. If you are deemed essential personnel, you will receive additional information and training in your job.

Emergency Response Organization

The Laboratory also maintains a larger, multiagency Emergency Response Organization made up of LANL managers and SMEs, Los Alamos County organizations, and state and federal agencies.

Building Emergency Plan

Each building or work area has a building emergency plan, which provides emergency procedure information for that location.

LANL's Building Emergency Plan Program, through the development and implementation of building emergency plans and procedures, assists workers in knowing what to do in the event of an emergency.

When You Report to Work

In your new work area,

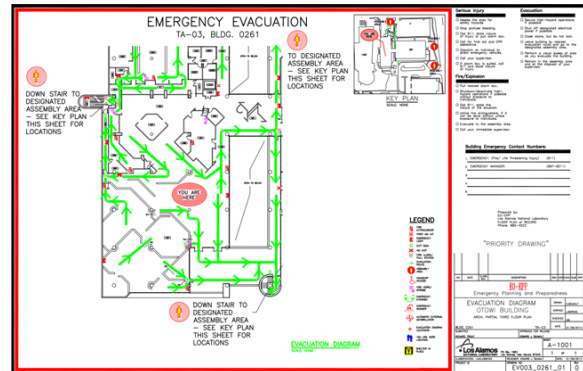
- find and review the evacuation maps posted in your work area,
- review the site evacuation map routes for your work location,
- find and review the building emergency plan for your work area,
- know your building designation and TA, and
- talk to your supervisor about what to do in an emergency; ask questions to ensure you fully understand.

Evacuation Maps

The two types of evacuation maps of which you should be aware are your building evacuation map and a LANL site evacuation map. A building evacuation map shows the locations of

- evacuation routes and exits,
- fire alarms,
- emergency equipment (such as fire extinguishers and first aid kits), and
- assembly areas (where to gather after evacuating the building).

Building evacuation maps are posted throughout Laboratory buildings.



Example: Building evacuation map for Otowi, TA-03,0261.

Emergency Training, Drills, Exercises

The Laboratory is required to provide initial training and periodic drills/exercises to all workers who may be required to take protective actions. You will practice evacuation and assembly in your work area. You may also participate in planned exercises to test your FOD's emergency response capabilities.

Planning, Preparedness, Management, and Response

The protective actions covered in this section should be followed in the event of a fire or a chemical, biological, radiological, or other emergency. *Remember*, no set of instructions can cover every type of emergency situation. Common sense and knowing your emergency procedures and protective actions will help you mitigate a hazardous event until additional help arrives.

Evacuate or Shelter?

When faced with an emergency situation, use common sense and available information to determine if there is immediate danger. Depending on the circumstances and type of emergency, the first decision is whether to evacuate or shelter. You must understand and plan for both possibilities.

At LANL, EOC personnel and the incident commander are trained to make the decision of whether to evacuate or shelter. Notification for either protective action may come from management, the Laboratory Communications Office, or the Mass Notification System.

The Mass Notification System will be used to contact the LANL workforce with protective action instructions via office phones, cell phones, and pagers. Text messages will be sent to pagers and e-mail messages to Lab accounts.

Site-Wide Evacuation

LANL covers nearly 37 square miles, with three major roads leaving toward the east, one major road to the west, and one major road to the north. During an evacuation, all available major roadways will be used to distribute vehicles as evenly as possible in an attempt to reduce congestion. Early dismissals and closures of the Laboratory because of dangerous weather conditions or emergency events could require a site-wide evacuation.

Depending on the nature of the emergency and its urgency, a decision will be made whether to evacuate the entire site or specific zones.

Laboratory Closure Information

For information on Laboratory emergencies, delays, and closures, check the LANL homepage or call the Laboratory Update

Information Hotline at 667-6622 or toll free at 1-877-723-4101.

Building Evacuation

Building occupants may need to evacuate in the event of a chemical spill, fire, suspicious package/bomb threat, or other emergency. Once evacuated, personnel need to assemble at their designated assembly area for accountability. If necessary, alternate assembly areas will be identified when the building evacuation is issued and should be located uphill and upwind from the emergency event. Notifications of additional protective actions and the release to return to your building will be announced at the assembly area.

Assembly Area Leader

At the assembly point, the assembly area leader will gather information on the safety of personnel, the emergency situation, and any other relevant information. The assembly area leader will then act as the point of contact upon arrival of emergency response personnel.

Incident Commander

The incident commander is the individual with authority and responsibility for command and control at an incident scene. Depending on the type of incident, an emergency manager, the senior fire department representative, the senior police representative, or another appropriately trained individual will serve as the incident commander.

Building Occupant Responsibilities during an Evacuation

Upon hearing the notification to evacuate (an alarm or verbal notification), all occupants will evacuate the building immediately according to the following guidelines:

Emergency Operations

- if safe to do so and with minimal delay, place hazardous operations and materials into a safe standby configuration;
- if accessible and safe to do so, take your coat, handbag/briefcase, and car keys in the event you are not allowed to reenter the building;
- do not carry food, drinks, or items that, if dropped, could inhibit safe egress or cause slips, trips, or falls;
- conduct a visual sweep along the exit route, looking for safety issues or anyone who might need assistance with evacuation;
- escort visitors and contractors to the designated assembly area;
- do not use elevators;
- if safe to do so and with minimal delay, take steps to secure the area so others cannot enter (for example, post the area, close the door without locking it);
- proceed to the designated assembly area using the evacuation route (i.e., if the route is blocked by unsafe conditions, take the nearest safe path out of the building);
- report to the designated assembly area for accountability;
- be aware of and give the right of way to responding emergency vehicles and personnel;
- remain quiet and orderly at the designated assembly area, and wait for further instructions or until the all-clear signal is given by the incident commander or designee; and
- do not reenter the building until instructed to do so by the assembly area leader (who will be instructed by the incident commander).

Evacuation of Individuals with Special Needs

Workers who have permanent or temporary special needs that may hinder their evacuation must notify their line manager. The line manager will assign coworkers to assist such workers during all emergency incidents.

Visitor Evacuation

All invited guests, visitors, and outside personnel (including craft workers) conducting business in a building are the responsibility of the person being visited. If an emergency evacuation occurs, building residents who are escorting a visitor are responsible for ensuring that the visitor has an appropriate level of briefing and understands how to respond to an emergency.

Reentry

After an evacuation, the first entry is made by emergency responders to perform mitigation or to determine if the area is safe for personnel. The incident commander is the only person authorized to give directions to return to the building.

Reporting an Emergency

Your Responsibility for Reporting an Emergency

You must immediately and properly report any emergency or abnormal event that may adversely affect you, your fellow workers, the public's health and safety, or the environment.

How to Report an Emergency

When the fire department, the police, or an ambulance is needed,

- call 911 and provide a description of the emergency, the location, and protective actions taken;
- call the EOC at 667-6211; and

Emergency Operations

- notify your line manager.

For all other incidents or for concerns that do not pose an immediate threat to life or property but have the potential of such a threat,

- call the EOC at 667-6211 and provide a description of the situation, location, and protective actions taken; and
- notify line management.

Emergency Injury/Illness

- Call 911 and ask for an ambulance.
- Send someone to meet the ambulance.
- For minor injuries, use first aid if trained to do so.
- Call the EOC at 667-6211.
- Contact your line manager.

For nonemergency medical attention or evaluation, personnel should be transported in a government vehicle. If a government vehicle is not available, then a private vehicle may be used for the nonemergency transportation of uncontaminated personnel to a medical facility.

Do not use a private vehicle to transport a contaminated or potentially contaminated individual.



Potentially contaminated workers must be transported by government vehicle (usually by the Los Alamos Fire Department) to OH or the Los Alamos Medical Center.

For nonemergency (non-life-threatening) injury/illness,

- use first aid if trained to do so,
- call OH at 667-0660 (24 hours a day on-call) for instructions (see the *Occupational Health* module), and
- report it to the line manager.

Hazardous Events

A hazardous event is defined as an activity that may result in harm to persons and/or damage to property or the environment. Your own common sense is the finest safety device ever developed. Above all, use your head.

Earthquakes

Take the following precautions during an earthquake:

- Stay calm, and help keep others calm.
- If indoors, stay there. To avoid falling objects and flying glass, get under an inside doorway, an inside corner of the room, or a desk or table.
- If outdoors, move away from power lines, buildings, and other structures that could collapse.

Take the following precautions after an earthquake:

- Do not smoke, light matches, or operate electrical devices that could ignite gas leaks.
- Avoid downed wires and objects in contact with them.
- Do not use elevators.
- Use the telephone only in case of emergency or injury to yourself or others.

Snow and Ice

- Wear shoes that have a good grip, and to the greatest extent possible, walk only on paths that have been cleared or sanded.
- Stay clear of sagging or downed power lines.
- Heavy snow and ice may cause tree limbs to fall; avoid areas with the heaviest concentration of trees.

Emergency Operations

- use extreme caution when driving.

Flooding

If outdoors,

- climb to higher ground;
- avoid walking or driving through flood water; and
- abandon your car at once if it has stalled, and climb to higher ground.

If indoors,

- be ready to evacuate as directed by emergency responders and
- move vital material and equipment to higher ground (time permitting).

Lightning

New Mexico has a high incidence of lightning strikes. When you see lightning,

- move to a safe location during thunderstorms to minimize the chance of injury;
- crouch low, feet together, or kneel (providing a single point of contact with the ground); and
- avoid contact with trees and metal objects, including bicycles. Find a low spot—not prone to flooding—away from trees, fences, and poles.

Hazardous Substance/Chemical Spill

Individuals must not attempt to control spills that are outside the approved work activity. Individuals must adhere to the following guidelines:

- Isolate the area, leave, and warn others to stay away.
- Move uphill and upwind.
- Immediately report the spill to the EOC at 667-6211. Be specific about the nature and location of the spilled materials.

- If exposed to chemicals, use the emergency eyewash/shower. Follow SDS (MSDS) information.
- If a radioactive substance has spilled, call the RCT.
- Notify your responsible line manager and the FOD.

Individuals with training, appropriate PPE, and appropriate spill containment material on hand may control a spill within their approved work activity.

Bomb Threat

If you receive a bomb threat, adhere to the following guidelines and checklist:

- Remain calm.
- If available, write down the phone number that appears on the caller identification screen.
- After the caller hangs up,
 - immediately call 911,
 - give all available information to the operator,
 - call the EOC at 7-6211, and
 - notify your supervisor.
- Do not pull the fire alarm pull box.
- Do not open/close windows or doors unless used for exit.
- Do not touch light switches during a bomb threat evacuation.
- Leave your office/room if instructed to do so.
- Evacuate to the assembly area in an orderly manner.

Secure ALL radio and cell phone communications. Do not use two-way radios or cellular telephones.

The first person to arrive at the assembly area should quickly scan for any suspicious items there. If a secondary device or

Emergency Operations

suspicious item is found, immediately notify the incident commander and proceed to an alternate assembly area.

Bomb Threat Checklist

Remember: Remain calm and obtain as much information as possible!

- If possible, signal to a second person that you are receiving a bomb threat and give the second person these instructions:
 - Dial 911
 - Ask that the Emergency Operations Center be notified of the bomb threat, and give the telephone number the call is coming in on.
 - If you have a phone that allows you to listen in to the conversation, take notes.
- Be calm and listen carefully.
- Do not interrupt or antagonize the caller.
- Try to develop a rapport by being sympathetic.
- Take notes:
 - Time and date call received
 - Time caller hung up
 - Exact words of the caller
 - Description of the caller's voice: male or female, young or old, accent, tone of voice, other voice characteristics. Is the voice familiar? Who does it sound like?
 - Background noise

Questions to ask

- When is the bomb going to explode?
- Where is the bomb right now?
- What kind of bomb is it?
- What does it look like?
- Why did you place the bomb?
- Where are you calling from?
- What are your name, address, and telephone number? (Believe it or not, many bomb threat callers will give this information just because they are asked to furnish it.)

Remember: Remain calm and obtain as much information as possible!

Unclaimed, Unattended Package

If an unclaimed, unattended package or device is found,

- immediately call 911 and the EOC at 7-6211, preferably from a landline phone in a safe location;
- DO NOT pull the fire alarm;
- DO NOT move, bump, or touch the object. The removal/disarming of a bomb must be left up to the professionals with the Hazardous Devices Team;
- secure the area, and prevent people from entering;
- evacuate the immediate area. The danger area should be identified and blocked off with a clear zone of at least 300 feet, including the area above and below the object;
- secure ALL radio and cell phone communications. Do not use two-way radios or cellular telephones because they could cause premature detonation of an electronic initiator;
- notify your senior management; and
- thoroughly wash your hands with soap and water if you are exposed to the suspicious package. Take care to not abrade the skin.

Tag Your Bags

Security and safety are always a top priority. LANL requires that all personal items be properly tagged. Untagged bags abandoned in public places at the Laboratory are assumed by the Hazardous Devices Team to be hazardous devices.

If the owner cannot be located, the item(s) will be destroyed. Do your part to prevent disruptive and expensive false alarms by taking the time to tag your bags. The tag should identify you as the owner and list a number where you can be reached.

You may use any form of identification tags on your bags, such as airline luggage tags, as long as these tags are securely attached

Emergency Operations

to your bags and contain your name and contact information.

Traffic Safety and Special Materials Convoys

On April 30, 2007, a new process with improved safety features was initiated for transporting special materials on roads that once would have required full road closure. Before this new process, transfers of these materials required full road closures that resulted in significant traffic delays. Now these special materials convoys move along with the normal traffic flow.

The purpose of this handout is to help employees and contractor personnel identify special materials convoys and understand what to do when encountering a special materials convoy on the road.

Identifying a Special Materials Convoy

The use of special materials convoys allows LANL to ship most hazardous



materials without full road closures. Special materials convoys can be identified as follows:

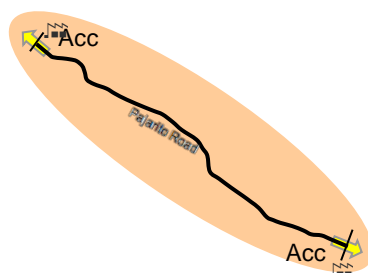
- at least three vehicles: a leading escort vehicle, a trailing escort vehicle, and a transfer vehicle (see photo at right);
- flashing lights on the leading and trailing escort vehicles;
- a sign on the trailing escort vehicle indicating that a transfer is in progress, do not pass the convoy, and stay back 50 feet; and
- travel at a reduced speed of no more than 35 miles per hour along the transfer route.

NOTE: *Flashing lights on a red government vehicle are the only indication on the lead vehicle of the convoy.*

Where Will Special Materials Convoys Operate?

LANL, Los Alamos Site Office (LASO), and the Department of Transportation (DOT) have agreed that the Pajarito Corridor meets the DOT requirements for “onsite transportation.” The Pajarito Corridor restricts public access because it is protected on both ends by access portals with security officers who check for badges.

Although most special materials convoys will take place within the Pajarito Corridor, these convoys can occur anywhere on LANL property. Road closures will still be needed during certain conditions inside



Special materials convoys will travel mainly between sites along the Pajarito Corridor.

and outside the Pajarito Corridor, but the duration and impact on traffic will be

minimal. For convoys outside the corridor, warning signs will be posted and personnel will

be placed as needed to ensure that public access is restricted.

Safety Expectations for Special Materials Convoys

A special materials convoy must follow strict regulations. Employees who encounter a special materials convoy in progress must also follow strict regulations. If you encounter a special materials convoy while driving, you **MUST**

Emergency Operations

- maintain a reduced speed of no more than 35 miles per hour along the transfer route when coming up behind a convoy;
- stay at least 50 feet behind the convoy;



- if the convoy is in the oncoming traffic lanes, move over safely, as far to the right as possible (as you would with an emergency vehicle—it is not necessary to make a complete stop);

- yield the right of way to the convoy, especially when the convoy is making a left-hand turn;
- follow all signals, signs, and verbal instructions from convoy personnel; and
- maintain normal traffic flow as much as possible while being consistent with the preceding instructions.

You MUST NOT

- pass the convoy in the direction of convoy travel,
- panic or pull over if the convoy approaches from behind,
- pull in front of the convoy or get in between the escort vehicles and the transfer vehicle, or
- make sudden stops in front of the convoy.

Noncompliance with Safety Expectations

Employees or contractor personnel who do not comply with the special materials convoys safety expectations described above may be subject to disciplinary action.

For More Information

For more information, contact Packaging and Transportation at 4-0765 or go to [Packaging and Transportation \(OS-PT\)](#) .

Student Self-Assessment

1. The building emergency plan contains
 - a. notification procedures
 - b. the Laboratory organizational chart
 - c. emergency procedures for building occupants
 - d. both a and c
2. Whom do you call to report an emergency?
 - a. 911, EOC, manager
 - b. manager, Lab director, 911
 - c. 911, line manager, local media
 - d. all of the above
3. You should evacuate your building
 - a. if you suspect that a suspicious package is present
 - b. during lightning conditions
 - c. during an earthquake
 - d. all of the above
4. What will help you lessen the effects of an emergency situation?
 - a. knowing your protective actions
 - b. knowing your emergency procedures
 - c. using common sense
 - d. all of the above
5. After evacuating your building, you are allowed to return to the building
 - a. when everyone has been accounted for
 - b. when emergency vehicles arrive
 - c. when the incident commander gives the "all clear" signal
 - d. if the weather makes it necessary

Answers

- 5. c
- 4. d
- 3. a
- 2. a
- 1. d

Emergency Operations

Notes. . . .

Occupational Health



In This Section

In General

By using this section and the student self-assessment, you will recognize the services, procedures, and responsibilities related to Occupational Health (OH).



What You Will Learn

When you have completed this section, you will be able to recognize

- the medical evaluations required at LANL,
- procedures for reporting work-related injuries and illnesses,
- the special health services available through the OH Group,
- the health-promotion services provided by the OH Group, and
- how your medical records are handled.

Occupational Health at LANL

Occupational Health Building

The Occupational Health building at TA-3, SM-1411 has a medical clinic for outpatient care, medical offices, and facilities for medical testing, x-ray, decontamination, and medical records.

Occupational Health Provides

- medical evaluations;
- clinical care for work-related injuries and illnesses, including radiation and contamination accidents;
- a reproductive health hazards program;
- work-related travel clinic services;

- substance-abuse and mental health counseling (Employee Assistance Program);
- health-promotion services;
- family and medical leave assistance; and
- medical surveillance and medical certification programs.

Availability of Services

All medical services offered by OH are available to Laboratory employees. Services to contract workers vary with contracts between their employers and the Laboratory. Contract workers should ask their employers about services that are available to them.

Medical Evaluations

New-Hire Evaluations

A full medical evaluation at the OH building is scheduled for all new employees. The new-hire evaluation provides baseline occupational medical information as you begin your employment. New-hire medical evaluations are not provided for temporary workers (expected to be on site fewer than 90 days), unless they will be performing work that requires medical surveillance or medical certification, or for subcontractors, unless they are enrolled in the Human Reliability Program (HRP) or some specific medical surveillance programs.



Occupational Health

Periodic Evaluations

Some job assignments require periodic medical surveillance or certification evaluations. For example,

- individuals who work with asbestos, with identified carcinogens, or in high-noise areas are monitored for early signs of health effects; and
- commercial truck drivers, respirator users, and security personnel are evaluated to ensure that their health meets job-performance standards before they are certified for their particular jobs.

Termination Evaluations

Before leaving the Laboratory, an employee is offered an exit medical evaluation. Terminating employees who decline the offered medical exam must do so in writing.

All Lab employees must comply with all health evaluation requirements. Contract workers may be required to participate in some Laboratory-specific medical surveillance and certification evaluations.

Return-to-Work Evaluations

An employee who is absent from work because of medical reasons for more than 5 consecutive calendar days (or an equivalent time period for those individuals on an alternative work schedule) must report to the OH clinic for evaluation before returning to work. An employee who was under a doctor's care must bring the doctor's release form upon returning. Any employee/worker who is absent for surgery must report to the OM clinic to obtain a medical clearance before returning to work. The employee must bring a written medical clearance for work from his or her surgeon or primary care provider. OH will determine if the employee is able to return to work and if any additional medical work restrictions or limitations are needed.

Medical Evaluation for Work

Supervisors may refer a worker to OH for a fitness-for-duty (FFD) evaluation if they are concerned about

- employee-identified medical problems affecting performance or behavior,
- safety or reliability in the workplace,
- substance misuse problems, or
- excessive sick leave.

If your supervisor refers you for an FFD medical evaluation, you must comply. P102-3, *Medical Evaluation for Work*, describes the process in more detail.

See "Your Medical Records" later in this section for information on how your privacy is protected.

Injuries and Illnesses

Reporting Work-Related Injuries and Illnesses

All work-related injuries or illnesses must be reported to your supervisor. During work hours, go to the OM building for evaluation and treatment. LANS employees must be evaluated initially by OH; employees of subcontractors are urged to go to OH but may use their own emergency service.

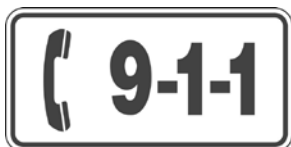
- If the injury/illness is a medical emergency, call 911 immediately to get an ambulance; then notify your manager.
- If you are not sure if you need an ambulance or where to go for treatment, call OH at 667-0660 for direction.
- During normal working hours, report to the OH clinic for evaluation. Your manager/designee should accompany you.
- After hours, on weekends, or offsite, call OH (24 hours/day) at 667-0660, extension 1, to reach the on-call provider for direction regarding where

Occupational Health

and when to report for evaluation and treatment.

- You must report to OH before returning to work, even if you have been treated for your occupational injury/illness somewhere other than OH.

In an emergency, call 911 and follow the emergency reporting procedures in the Emergency Management section of this handbook, then notify OH at 7-0660. Return to work through OH for evaluation.



By law, all work-related injuries or illnesses must be reported within 15 calendar days to be considered for workers' compensation. If you have questions about the need to go through OH, call 7-0660.

How Work-Related Injuries or Illnesses Are Handled

OH medical providers perform initial care and follow-up treatment for work-related injuries and illnesses of LANL/LANS employees, MSS, Protective Force, LAFD, and DOE/NNSA Los Alamos Field Office (NA-LA) workers. The OH staff works closely with the worker's compensation specialists and the Early Return to Work coordinator.

For other contract workers, OH provides initial care for work-related injuries or illnesses that occur on LANL property. Follow-up treatment is carried out according to the terms of the individual employer contracts.

Injuries and Illnesses Unrelated to Work

A private health care provider should treat an injury or illness that is not related to your work. Medical restrictions imposed by your private physician must be evaluated by OH to ensure that you are able to work safely.

Ergonomics

Some injuries can develop slowly following repetitive activities such as typing, lifting, bending, and twisting the back and upper extremities. LANL has the following ergonomics services to help reduce or eliminate work-related factors that can cause these injuries:

- ergonomics website: <http://ergo.lanl.gov>;
- individual worksite ergonomic evaluations;
- specific ergonomics training;
- office ergonomics demo room SM-30, W115 (Tuesdays and Wednesdays, 8-10; Thursdays: 2-4);
- glovebox ergonomics demo equipment;
- equipment programs to aid employees in finding and acquiring proper equipment; and
- manual materials handling solutions database.

Reproductive Health Assistance Program (RHAP)

Protection against Reproductive Health Hazards

The RHAP helps to protect against reproductive health hazards to which you may be exposed in the workplace.

Reproductive health services are available if you are pregnant, planning a pregnancy (regardless of whether you are a male or female employee), or nursing a baby.

Reproductive Health Assistance Program Services

Through the RHAP, representatives from OH, Radiation Protection, and Industrial Hygiene & Safety

- conduct workplace evaluations on request,

Occupational Health

- inform workers of the reproductive hazards in their workplace, and
- inform workers of the options available to minimize their exposure.

If you are pregnant, you are encouraged to declare your pregnancy in writing to your supervisor and/or OH at MS D421.

Travel Clinic

Travel Clinic Services

The OH travel clinic offers information on the health risks of travel to foreign countries. The clinic provides

- immunizations for official Laboratory travel,
- Centers for Disease Control travel advisories,
- information on overcoming jetlag, and
- information on finding physicians and/or medical care while on travel.

Employee Assistance Program (EAP) Counseling and Referral

The EAP provides confidential, short-term counseling. Any LANL badge holders may schedule an appointment with a counselor to discuss any difficulties they are experiencing at work or in their personal lives.

Confidentiality is of primary importance to all EAP counselors. We will not release any information regarding your contact with the EAP without your written consent, unless we are obligated by law to release information regarding issues of danger to self or others or concerning the abuse or neglect of children or the elderly.

EAP services include

- individual counseling,
- crisis intervention,

- stress management,
- veteran's issues,
- substance misuse,
- DOE actions on security clearances, and
- Management consultations.

Call the EAP at (505) 667-7339 with questions or to schedule an appointment.

Services for Persons with Disabilities

Assistance for Persons with Disabilities

LANL has systems in place to assist anyone onsite with temporary or permanent disabilities. OH can help with requests for work adjustments or reasonable accommodations of temporary or permanent disabilities.



Health Promotion and Fitness Services

Preventive Medicine Services

OH provides preventive medicine services, such as

- blood-pressure monitoring;
- screening services (for example, testing blood sugar and blood pressure);
- training on health-related topics (for example, back care and ergonomics); and
- health promotion and fitness incentive programs.



Health and Fitness Programs

OH also provides health and fitness programs through the Wellness Center, which is located at TA-3, SM-1663. Programs include

Occupational Health

- weight management,
- stress management,
- smoking cessation,
- cholesterol reduction,
- injury prevention, and
- exercise classes.

For more information, call the Health and Fitness Program at 5-3559.

Your Medical Records

Your Records Are Private

OH keeps health records on all individuals seen in the OH onsite clinic. You may see your own health records. With your written authorization, LANL will send personal health information to anyone you choose (such as your primary care physician and insurance companies).

Your personal health information is protected by the Health Insurance Portability and Accountability Act (HIPAA) Medical Privacy Standards and by other applicable laws and regulations. HIPAA describes how your personal health information may (and may not) be used or shared. Worker and employer rights and responsibilities under this law are described

in the Laboratory Notice of Privacy Practices, which is available at the OH facility. EAP records and HRP records are kept confidential and separate from the OH patient record.

What Your Supervisor May Learn

OH will tell your supervisor only

- whether leave for health reasons is appropriate,
- how long your leave may last, and
- what your medical work restrictions or limitations are when you return.

Work-Related Injury/Illness Records

If you are seen for a work-related injury or illness, need-to-know information related to that injury or illness is sent to the worker's compensation case workers and to the safety investigators for review.

Worker's compensation caseworkers will ensure that worker's compensation benefits are administered properly under New Mexico law. Safety investigators will identify workplace hazards and ensure that OSHA reporting requirements are met.

Student Self-Assessment

1. All but one of the following special circumstances require a medical evaluation. The exception is
 - a. beginning employment with the Laboratory
 - b. handling asbestos or other carcinogens
 - c. returning from travel outside the US
 - d. a supervisor-referred fitness-for-duty evaluation
2. While walking into your building, you were stung by a bee. You are having trouble breathing and do not have your epinephrine injector. You should
 - a. call 911 to get immediate first aid attention
 - b. notify your supervisor and OH as soon as possible
 - c. return to work through OH
 - d. all of the above, in sequence
3. How can you get help if you have a problem with substance abuse?
 - a. ask for help through OH
 - b. try to overcome the problem yourself
 - c. call the protective force
 - d. none of the above
4. All but one of the following health promotion services are provided by OH. The exception is
 - a. training on health-related topics
 - b. allergy shots
 - c. blood pressure monitoring
 - d. screening services and examinations

Answers

4. b
3. a
2. d
1. c

Environment



In This Section

In General

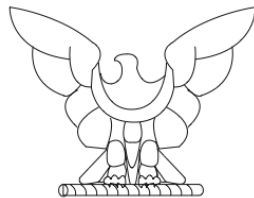
This section will provide you with the resources and tools necessary to achieve and maintain compliance with federal, state, and internal environmental requirements.



What You Will Learn

When you have completed this section, you will be able to recognize

- environmental laws, regulations, and internal requirements designed to protect human health and the environment;
- organizational resources available at the Laboratory to assist with environmental compliance performance;
- institutional tools that may be used to ensure compliance with environmental regulations; and
- your responsibilities for complying with Laboratory environmental policies.



LANL Governing Policy on the Environment

We are committed to act as stewards of our environment to achieve our mission in accordance with all applicable environmental requirements. We set continual improvement objectives and targets, measure and document our progress, and share our results with our workforce, sponsors, and public. We reduce our environmental risk through legacy

cleanup, pollution prevention, and long-term sustainability programs.

Environmental Laws and Regulations

Federal Laws and Regulations

Numerous laws govern the protection of human health and the environment. Some of these laws include

AEA	Atomic Energy Act
ARPA	Archaeological Resources Protection Act
CAA	Clean Air Act
CWA	Clean Water Act
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
RCRA	Resource Conservation and Recovery Act
SDWA	Safe Drinking Water Act
TSCA	Toxic Substances Control Act

After laws are passed, Congress directs the appropriate federal agency to develop regulations to meet the intent of the laws and to serve as an enforcement mechanism. The Environmental Protection Agency (EPA) is the primary agency responsible for developing federal environmental regulations found in Title 40 of the Code of Federal Regulations (CFR).

State Laws and Regulations

The New Mexico Environment Department (NMED) has been granted authority by the EPA to enforce many environmental laws and regulations. The state law governing hazardous waste management activities at the Laboratory, as well as throughout New Mexico, is the New Mexico Hazardous Waste Act (NMHWA).

The state of New Mexico also has environmental regulations implementing the NMHWA and other environmental laws. The environmental regulations are designed to

- protect cultural, biological, and natural resources;
- improve air and water quality; and
- control waste storage, treatment, and disposal.

The state environmental regulations are found in Title 20 of the New Mexico Administrative Code (NMAC).

LANL must comply with all applicable state and/or federal environmental laws and regulations.

Laboratory Resources

LANL Environmental Policy and Requirements Documents

The Laboratory is committed to protecting workers, the public, and the environment. The Laboratory's environmental policy documents combine safe work practices with environmental compliance requirements called out in federal and state laws and regulations.

LANL also has contractual and legal requirements to carry out federal and state environmental regulations. Mandatory requirements are documented in LANL's Operating Contract. The methods used to comply are addressed in LANL's policies and procedures.

To access Laboratory environmental policy and requirements documents online, select Environment from the LANL homepage.

The Environment, Safety, and Health (ES&H) requirements for subcontractors are found in P101-12, *ES&H Requirements for Subcontractors*.

Environmental Protection and Compliance

The Environmental Protection and Compliance Division, organized into the Compliance Programs and Environmental Stewardship groups, provides leadership in environmental protection services and compliance support to anticipate and manage environmental risk to support LANL's mission.

Air Quality Team

You could go days without food and hours without water, but you would last only a few minutes without air. On average, each of us breathes more than 3000 gallons of air each day. Air pollution can threaten the health of human beings, trees, lakes, crops, and animals, as well as damage the ozone layer and buildings. Air pollution also can cause haze, reducing visibility in national parks and wilderness areas.

Some of the functions performed by the Air Quality Team are

- assistance in complying with the air quality permits required by state and federal regulations;
- environmental air monitoring for compliance at LANL;
- evaluation of Laboratory operations that vent radioactive material, volatile organic compounds, and hazardous air pollutants into the atmosphere;
- regulatory compliance for air quality by working with regulators and internal LANL customers; and

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- meteorology services.

Information regarding air permits, emissions, reporting, and requirements for a specific source can be found at <http://int.lanl.gov/environment/air>.

Water Quality

Water quality refers to minimizing and preventing pollution of and adverse impact to rivers, lakes, canyons, arroyos, and storm water runoff in and around LANL. Pollutants that affect water quality at LANL include oil and grease, chemicals, waste materials, unplanned releases of water, and disturbed or exposed soil. In fact, the EPA has identified sediment (soil) as the number one pollutant of streams, rivers, and lakes in the US.

LANL's water quality compliance and monitoring activities include

- evaluating historical groundwater and surface water contamination levels and implementing appropriate cleanup activities;
- performing sampling, processing, and analysis of environmental media;
- providing institutional coordination, integration, and communication of all water-resource-related monitoring activities, permits, data, and documentation;
- interpreting major state and federal water resource laws and regulations;
- developing and implementing institutional standards and policy with line organizations; and
- interacting with government agencies, stakeholders, the public, and Indian tribes on water quality/water resource management issues.

For more information, call 667-0666 or visit the Water Quality website at <http://int.lanl.gov/environment/water/index.shtml>.

Resource Conservation & Recovery Act (RCRA) Program

Every LANL employee is involved in the waste management process from the time of generation through ultimate disposal ("cradle to grave"). Waste management personnel provide support in waste management, minimization, treatment, storage, disposal, and regulatory compliance in the following general functions:

- generator support activities to help waste generators characterize wastes correctly and manage waste in an environmentally compliant and safe manner;
- waste minimization to reduce operating and disposal costs of waste and enhance the safety of operations;
- treatment, storage, and disposal pathways for the safe and legal disposition of LANL waste streams; and
- regulatory compliance management for LANL waste streams by working with regulators and waste generators.

Biological Resources at LANL

LANL strives to balance growth and mission with proactive and effective management of biological resources. The goals are to minimize impacts to a variety of threatened, endangered, and sensitive species and their habitats and to ensure that all activities and operations comply with regulatory requirements for environmental protection.

Cultural Resources at LANL

Cultural resources include archaeological sites, historic buildings, structures, and places sacred to Native American people. The Cultural Resources Program's purpose is to manage the cultural resources at LANL effectively and to assist DOE NA-LA with its federally mandated responsibilities under the National Historic Preservation Act (NHPA), Native American Graves Protection and

Environment

Repatriation Act, Archaeological Resources Protection Act (ARPA), and other pertinent historic preservation laws, regulations, and guidance.

LANL cultural resource personnel must be consulted when planning construction or other projects with the potential to affect undeveloped areas, historical buildings, and/or structures on LANL property. The Resources Management Team conducts reviews of LANL projects that could potentially impact cultural resources.

NEPA and SWEIS

Signed into law in 1970, NEPA establishes a systematic and transparent process for environmental reviews. The Site-Wide Environmental Impact Statement (SWEIS) provides an operating envelope for LANL that complies with NEPA. Nearly all LANL work is reviewed to determine its NEPA coverage.

Integrated Project Review Program

SMEs from each program in the Environmental Protection and Compliance Division (EPC) review new or modified activities and projects to identify environmental compliance requirements. Tools used for reviews include the Integrated Review Tool, Permits Requirements Identification, Excavation/Fill/Soil Disturbance, and Siting.

Environmental Management System (EMS)

All employees are expected to know how their work interacts with the environment; the EMS is the primary method for achieving this expectation. This systematic method for assessing potential environmental impacts of LANL's activities, products, and services prioritizes improvements, measures results, and provides the basis for continuous improvement of environmental performance.

Each LANL directorate has an EMS point of contact who is responsible for ensuring that EMS information and requirements are communicated to the directorate's employees. Employees are required to take *EMS Environmental Awareness Training* (Course 32461). For more information on EMS, visit <http://ems.lanl.gov>.

Waste Management Coordinator

The Waste Management Coordinator (WMC) Program provides direct waste management support and guidance to LANL facility operations through deployment of trained and qualified personnel to support routine waste disposition. Each group, division, or facility has a WMC who serves as the primary contact for waste management and pollution prevention/waste minimization efforts. The WMC is familiar with the organization's processes and procedures that generate waste and should be the first person you contact regarding waste management matters.

Write the name and telephone number of your WMC on your Safety and Security Quick Reference Badge.

Pollution Prevention and Sustainability

As you plan and conduct your work at LANL, consider implementing the following pollution prevention/waste minimization techniques:

- conservation,
- source reduction,
- material substitution,
- waste segregation,
- reuse,
- recycling, and
- sustainable (green) acquisition.

You might win a cash award if you complete any project that prevents pollution or minimizes waste at LANL. Brief

Environment

descriptions of pollution prevention/waste minimization techniques and cash award

scenarios follow.

Pollution Prevention/Waste Minimization Techniques		
Technique	Definition	Cash Award Scenario
Conservation	The controlled use and protection of any resource—that is, the use of the smallest possible amount of any resource (including energy, water, or materials) to complete each activity	The mailroom reduced waste by using plastic skids made of recycled material, which eliminated the use of wood skids in its operation. The wood skids tended to break after 6 or 7 uses, whereas the plastic skids can be used at least 100 times.
Source Reduction	The design or modification of work practices and/or products to avoid or reduce the generation of waste or pollution	Oil-free pumps are now being used in many areas at LANL. The absence of oil reduces waste generation and maintenance time.
Material Substitution	The replacement of hazardous materials with nonhazardous or less-hazardous materials or replacement of disposable materials with reusable materials	Previously, lead crimps were used as safety devices for backflow prevention maintenance operations. The team identified a plastic crimp that could be substituted for the lead crimp, which eliminated lead crimps from the Laboratory's hazardous and mixed waste streams.
Waste Segregation	The separation of different kinds of waste	A team designed a method of separating industrial water from storm water, thus eliminating an outfall or discharge into the environment.
Reuse	To use again	Polyethylene can effectively be used for neutron shielding. Instead of disposing of 500 pounds of polyethylene bricks as low-level waste from TA-55, the bricks were given to another user for reuse.
Recycling	Use or reuse: the return of a potential waste material either to the originating process as a substitute for an input material or to another process as an input material. Reclamation: the recovery of a useful or valuable material from waste.	Some of the unwanted lead at LANL is recycled into liners for special waste storage drums. To find out what can be recycled at the Laboratory, go to LANL's homepage and click on the Environment tab, then click on Recycle; or send e-mail to wastenot@lanl.gov .
Sustainable (Green) Acquisition	The purchasing of products or services that are considered environmentally preferable or have a lesser or reduced (negative) effect on human health and the environment than other products and services.	Lead aprons present a waste disposal concern when they are no longer usable. Lead-free aprons were purchased and found to provide the same shield effectiveness as traditional lead aprons.

Cleanup and Remediation

LANL's environmental risk reduction programs seek to remedy environmental problems caused by past LANL operations by bringing together multidisciplinary world-class science, engineering, and state-of-the-art management practices. The goals are to protect human health and the environment from exposure to hazardous, radioactive, and mixed wastes from past waste management practices and to meet the environmental cleanup requirements of LANL's permit to operate hazardous waste facilities.

All Things Environmental

For more information about the environmental programs at the Laboratory, go to the LANL homepage and click on Environment.

Your Responsibilities

Environmental Protection

Each worker at LANL is responsible for protecting the environment.

Laws, Regulations, and Laboratory Requirements

It is your responsibility to be well acquainted with LANL environmental policies that pertain to your job function. These policies satisfy federal and state environmental laws and regulations. Ask your supervisor for the documents you will need to perform your job in accordance with federal, state, and LANL environmental protection requirements. As with any work performed at the Laboratory, remember that both the work and the worker need to be authorized.

Consequences of Noncompliance

Not complying with laws and regulations can result in fines and closures, as well as damage to human health and the environment. You can be held personally responsible for deliberately violating environmental protection laws.

Student Self-Assessment

1. Which agency is primarily responsible for developing the federal environmental laws?
 - a. National Security Agency
 - b. Environmental Protection Agency
 - c. Central Intelligence Agency
 - d. Occupational Safety and Health Administration
2. The Environmental Management System sets the expectation that each employee should
 - a. keep a log of each piece of paper recycled
 - b. leave environment protection to the professional environmentalists
 - c. concentrate on completing a job without regard to the environment
 - d. know how their work interacts with the environment
3. Each designated waste management coordinator
 - a. removes all waste from the building
 - b. inspects all waste products
 - c. is the primary contact for waste management and pollution prevention/waste minimization efforts
 - d. treats all hazardous waste generated
4. All but one of the following are pollution prevention/waste minimization techniques. The exception is
 - a. conservation
 - b. material substitution
 - c. acceptable knowledge
 - d. recycling
5. Failure to follow environmental laws, regulations, and/or permits
 - a. can result in fines
 - b. can result in closures
 - c. has the potential for personal liability if the violation is deliberate
 - d. all of the above

Answers

5.d
4.c
3.c
2.d
1.b

Acronyms



ACGIH	American Conference of Governmental Industrial Hygienists	FFD	fitness for duty
AD	associate director	FFD	fitness for duty
ADMASER	Associate Directorate for Mission Assurance, Security, and Emergency Response	FOD	facility operations director
AEA	Atomic Energy Act	FP-DO	Fire Protection Division office
AIDS	acquired immunodeficiency syndrome	FRD	formerly restricted data
ALARA	as low as reasonably achievable	FV&A	Foreign Visits and Assignments
ANSI	American National Standards Institute	GET	General Employee Training
ARPA	Archaeological Resources Protection Act	HIPAA	Health Insurance Portability and Accountability Act
CAA	Clean Air Act	HIV	human immunodeficiency virus
CAS	Contractor Assurance System	HR-ODSS	Human Resources Office of Diversity and Strategic Staffing
CFR	Code of Federal Regulations	HRP	Human Reliability Program
CI	Counterintelligence	IA	issuing authority
CUI	controlled unclassified information	ISM	Integrated Safety Management
CWA	Clean Water Act	ISMS	Integrated Safety Management System
DOE	Department of Energy	ITS	Institutional Training Services (group)
DSESH	ESH Deployed Services	IWD	integrated work document
EAP	Employee Assistance Program	LANL	Los Alamos National Laboratory
ECI	export-controlled information	LANS	Los Alamos National Security, LLC
ECP	Employee Concerns Program	LIST	LANL Investigative Services Team
EMS	Environmental Management System	MBTA	Migratory Bird Treaty Act
ENV-DO	Environmental Protection Division	MS	mail stop
EOC	Emergency Operations Center	MSDS	material safety data sheet *(outdated term, now known as SDS)
EPA	Environmental Protection Agency	NA-LA	Los Alamos Field Office
EPCRA	Emergency Planning and Community Right-to-Know Act	NCS	Nuclear Criticality Safety
ES&H	Environment, Safety, and Health	NEPA	National Environmental Policy Act
ESA	Endangered Species Act	NFPA	National Fire Protection Program
		NHPA	National Historic Preservation Act

Acronyms

NIOSH	National Institute for Occupational Safety and Health	RD	restricted data
NMAC	New Mexico Administrative Code	RHAP	Reproductive Health Assistance Program
NMC&A	Nuclear Materials Control and Accountability	RLM	responsible line manager
NMED	New Mexico Environment Department	RN	requirement notice
NMHW	New Mexico Hazardous Waste Act	RP	Radiation Protection (division)
NNSA	National Nuclear Security Administration	RP-PROG	Radiation Protection Programs
NSI	national security information	RP-SVS	Radiation Protection Services
OCI	Office of Counterintelligence	RWP	radiological work permit
OCSR	Organizational Computer Security Representative	S/CI	suspect/counterfeit item
OH	Occupational Health (group)	SD	system description
OPSEC	Operations Security (program)	SDS	safety data sheet (see MSDS)
OSH	Occupational Safety and Health Division	SDWA	Safe Drinking Water Act
OSHA	Occupational Safety and Health Administration	SIT	Security Incident Team
OUO	official use only	SM	South Mesa
P	procedure	SME	Subject Matter Expert
PA	property administrator	SWEIS	Site-Wide Environmental Impact Statement
PAD	principal associate director	TA	technical area
PASS	pull, aim, squeeze, sweep	TLD	thermoluminescent dosimeter
PD	program description	TSCA	Toxic Substances Control Act
PDA	personal digital assistant	TSCM	technical surveillance countermeasures
PDA	Personal Digital Assistant	UCNI	unclassified controlled nuclear information
PF	protective force	URL	uniform resource locator
PHD	procurement help desk	US	United States
PII	personally identifiable information	VAP	vehicle access portal
PIN	personal identification number	VPP	Voluntary Protection Program
PPA	property protection area	WMC	waste management coordinator
PPE	personal protective equipment		
QPA-IQ	Institutional Quality Group		
RCRA	Resource Conservation and Recovery Act		
RCT	radiological control technician		

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work-related injuries and illnesses 12-2, 12-5

X

x-ray 9-2, 9-3, 12-1, 14-3



GET

General Employee Training

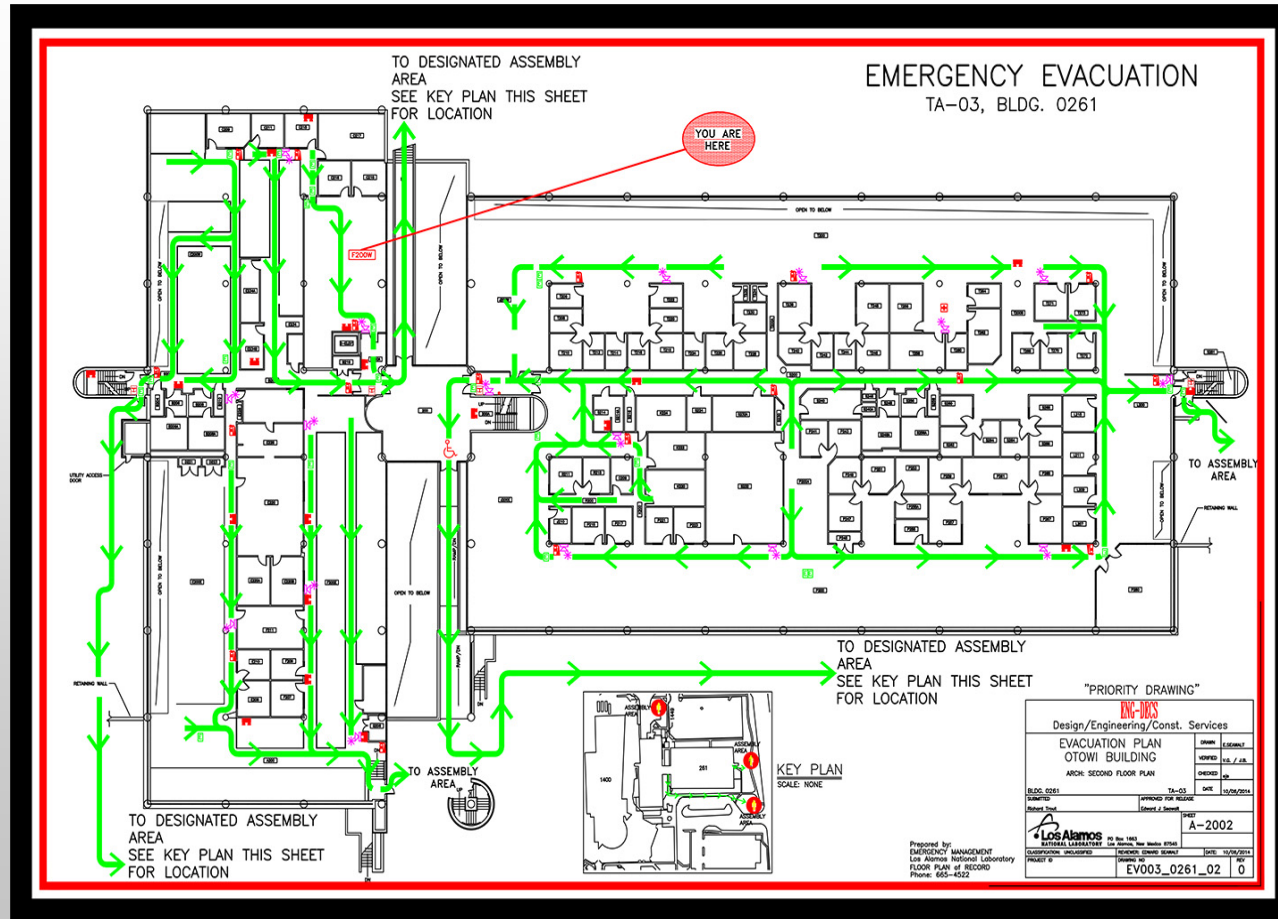


Today's Schedule

- **8:00 – 12:00** **Modules 1 – 10 with two breaks**
- **12:00 – 1:00** **Lunch**
- **1:00 – 2:50** **Modules 11 – 14 with one break**
- **3:00 – 4:30** **Examination**

You may have a variety of instructors throughout the day.

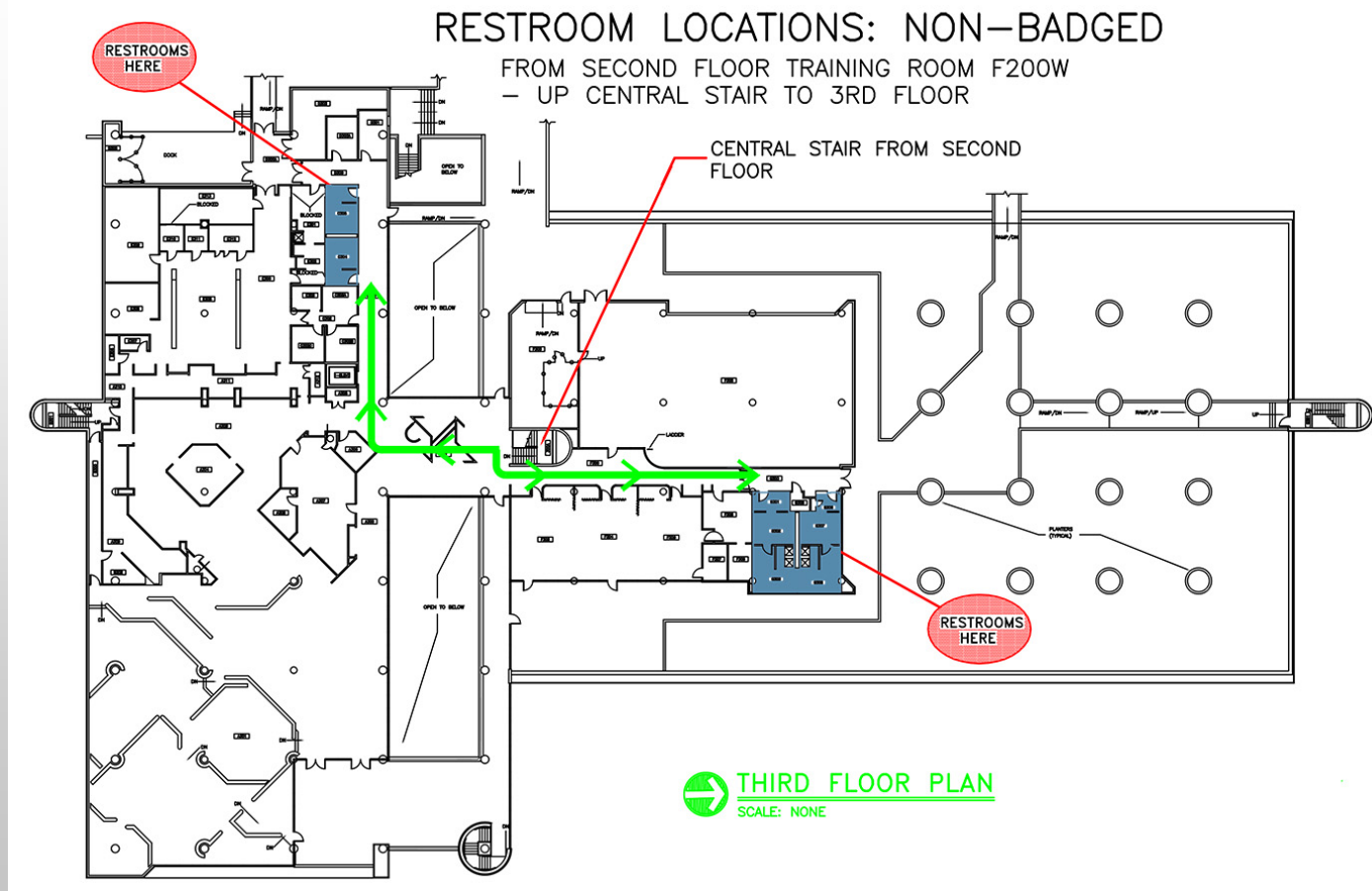
Otowi Training Room



General Employee Training: Introduction

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Otowi Facilities - Nonbadged Workers





GET Exam

- 40 multiple-choice questions.
- Open book (handy index at back of book).
- 80% or better to pass (get at least 32 correct).
- Test begins at 3:00; must complete by 4:30. If you anticipate needing more than 1 1/2 hours, schedule yourself to come when you will have 3 1/2 hours.
- Review session Wednesday at 10:00, with a retake at 1:00.
- Reschedule for third try if needed.
- If you do not pass on the third try, you must wait 6 months before making another attempt.



CRYPTOCards



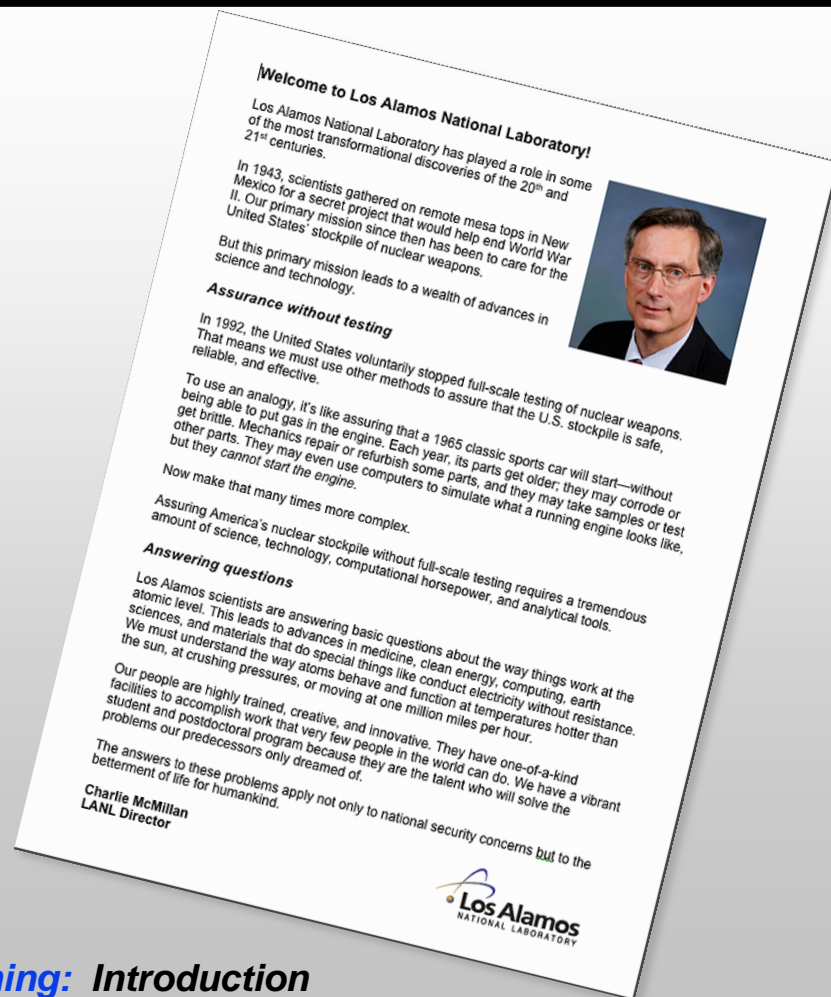
If you have a **CRYPTOCard** with administrative (A-level) authorities, you **MUST** have it with you to be proctored for the exam.



Introduction to the Laboratory

Welcome from the Director

1-1





You Will Learn

1-2

- **information about this handbook**
- **about the history of Los Alamos**
- **the Laboratory's vision and mission**
- **the Laboratory's values**
- **how the Laboratory serves the nation today**
- **the Laboratory's goals**
- **how the Laboratory is structured**

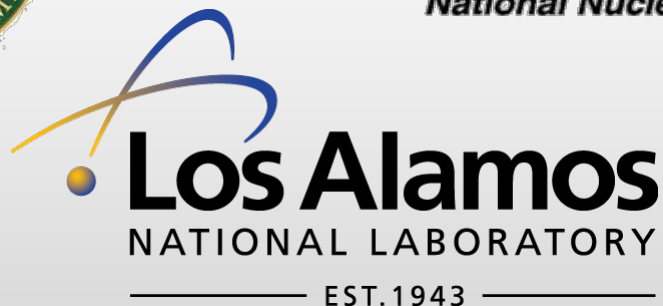


You are connected to an historic institution that serves an important national security service to the nation.

Each of us shares the responsibility to perform our work safely, securely, efficiently, and with a dedication to excellence.

Reason for This Training

1-2



The Laboratory is operated by Los Alamos National Security, LLC (LANS), under contract to the NNSA.



GET Topics

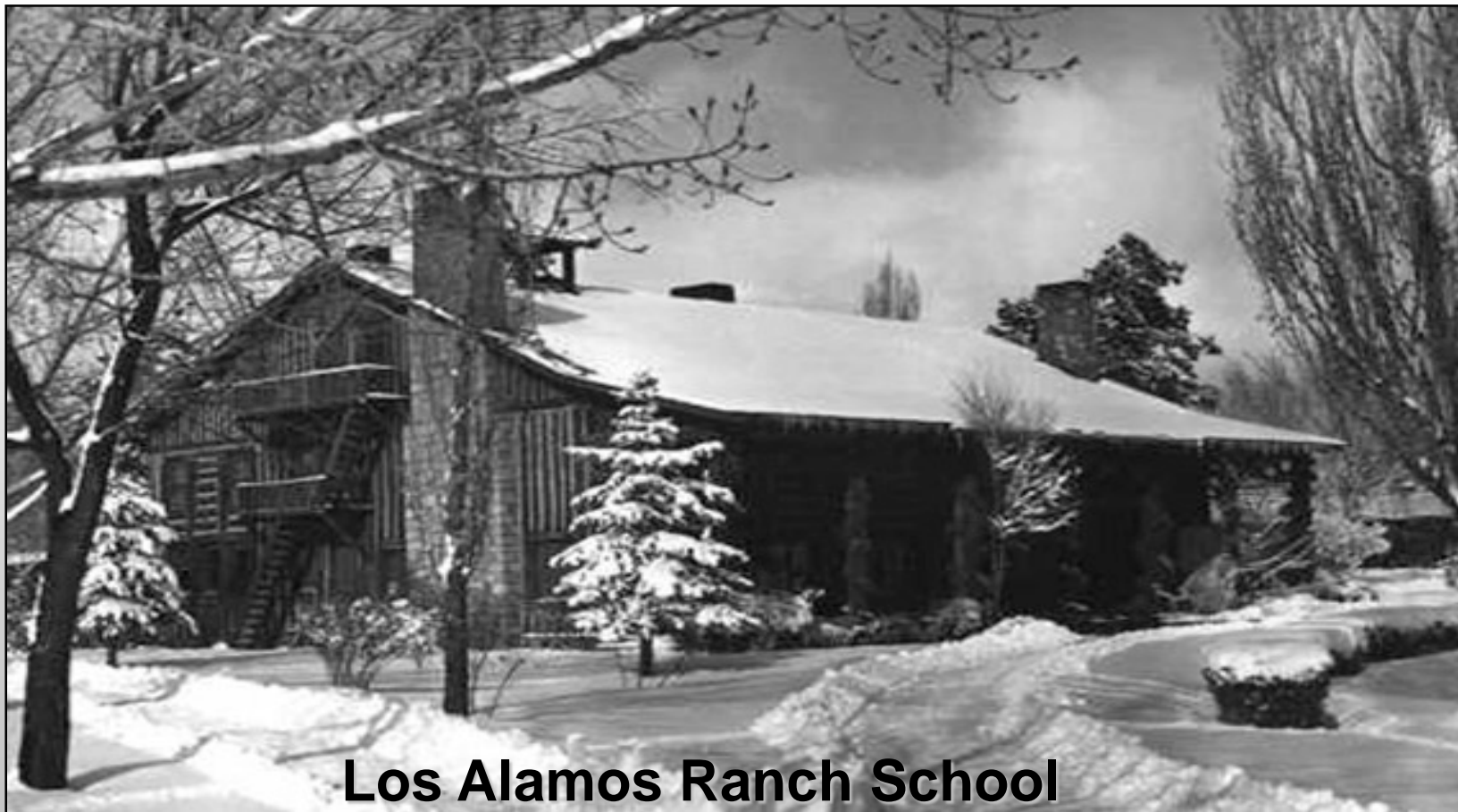
i– iii

- Introduction to the Laboratory
- Institutional Quality Assurance
- Facilities
- Policies, Procedures, and Other Documents
- Safety and Security Expectations
- Worker Protection: Occupational Safety and Health
- Industrial Hygiene and Safety
- Lockout/Tagout
- General Employee Radiological Training
- Fire Protection
- Security
- Emergency Management
- Occupational Medicine
- Environment
- Acronyms and Index



History of Los Alamos

1-3



General Employee Training: *Introduction to the Laboratory*

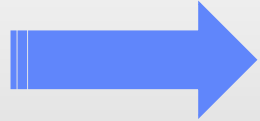
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Historical Preservation

1-3

- Laboratory land contains more than 2000 identified archaeological and historic sites and buildings, representing a history spanning 7000 years.

These sites are depicted in blue in this flyover





Historical Preservation

1-3

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- Fo
- pro



Nake'muu



LA Museums and Bandelier

1-3



General Employee Training: Introduction to the Laboratory

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Manhattan Project

1-4

**General
Leslie Groves**



**J. Robert
Oppenheimer**

General Employee Training: Introduction to the Laboratory

GET_15503_VG1,R7.5



Manhattan Project

1-4



TA-1 during the war years

General Employee Training: *Introduction to the Laboratory*

GET_15503_VG1,R7.5



The Founding of the Laboratory

1-4

“I feel that the bear which we have caught by the tail is so formidable that there is a strong obligation upon us to find out how to let go or hang on.”
—Norris Bradbury





The Founding of the Laboratory

1-4



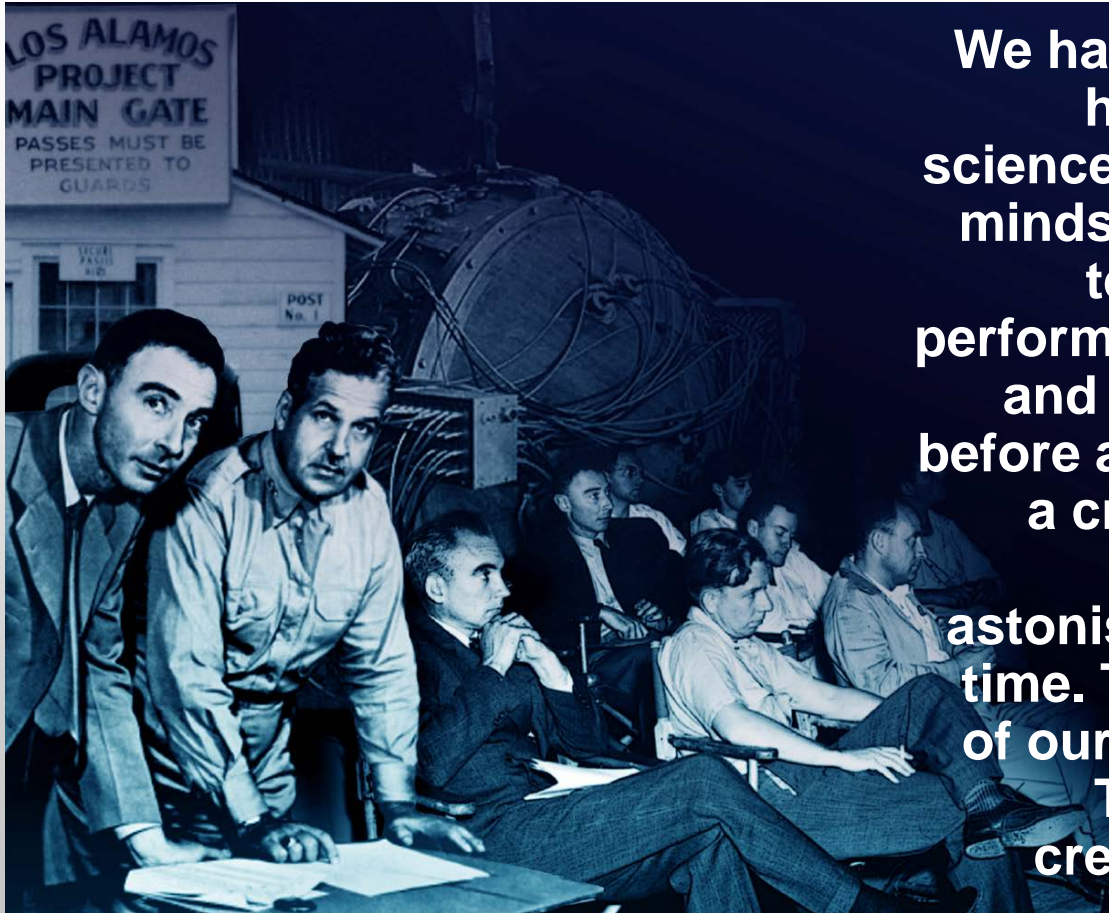
Ashley Pond in the early '50s

General Employee Training: *Introduction to the Laboratory*

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Proud Legacy

1-4



We have a proud history and heritage of 70+ years of science and innovation. Great minds and multi-disciplinary teams were gathered to perform a scientific, technical, and engineering feat never before accomplished, to solve a crucial national security concern, over an astonishingly short period of time. The remarkable people of our first scientific project, The Manhattan Project, created our proud legacy.



The extraordinary spirit that transformed the world is still in our institutional DNA—it is who we are.



Our Vision

1-4

**Delivering science and technology
to protect our nation and promote
world stability.**



Laboratory Mission

1-4



To solve national security challenges
through scientific excellence.



Core Values

1-4

The Laboratory is committed to

- **Service**
- **Excellence**
- **Integrity**
- **Teamwork**
- **Stewardship**
- **Safety and Security**

Each worker is expected to follow these essential values.



How We Serve

1-5

Our enduring value is our unique technical ability to work at the challenging intersection of

- **mission-essential nuclear capabilities,**
- **cutting-edge open science, and**
- **classified mission drivers.**

We deliver science and solutions to evolving national priorities in defense, energy, and intelligence, bringing the best science to bear on tough national security challenges.



Goals

1-5

- **Deliver national nuclear security and broader global security solutions**
- **Foster excellence in science and engineering disciplines**
- **Attract, inspire, and develop talent to ensure a vital future workforce**
- **Enable mission delivery through next-generation facilities, infrastructure, and operational excellence**



Laboratory Organization

1-5

- The workforce is led by a senior leadership team, including the director, deputy director, executive director, five principal associate directors (PADs), numerous associate directors (ADs), and key functional leaders.
- Under a given AD directorate are divisions and programs. Under the divisions are groups, and groups are composed of teams.



Institutional Leaders

1-5

Los Alamos National Laboratory

Institutional Leaders

 Chief Financial Officer Jay Johnson	 Laboratory Counsel David Sosinski
 Chief Information Officer Mike Fisk	 Ethics & Audit Director Michelle Cantu (Acting)
 Communications & Public Affairs Matt Nering	 Government Affairs & Protocol Patrick Woeltje
 Prime Contract Manager Andrea Martinez (Acting)	 Office of Equal Opportunity & Diversity Charles (CJ) Racine
 LANS, LLC Executive Staff Director Karen West	 Ombuds Office Mary Beth Stevens



Charlie McMillan
Laboratory Director



Richard (Rick) Kacich
Deputy Laboratory Director



Dave Lyons
Executive Director




Randy Erickson
Associate Director


Environmental Management


Alan Bishop
Principal Associate Director
Science, Technology & Engineering

 Chemistry, Life, & Earth Sciences Assoc. Director Nan Bauer	 Engineering Sciences Assoc. Director Steve Girins	 Experimental Physical Sciences Assoc. Director Mary Hockaday	 Theory, Simulation, & Computation Assoc. Director John Sarao
ADCLS Bioscience	ADL Applied Engineering & Technology	ADSPS Statistical Physics & Applications	ADTSC Computational, & Technical Sciences
Chemistry	Accelerator Operations & Technology	Physics	WIP
Earth & Environmental Science	Frontiers Education	Materials Science & Technology	Theoretical


Applied Energy Program	Chilton Nuclear Energy Program	Laboratory Directed Research & Development
National Security Education Center	Office of Science Programs	Science Resource Office






Bob Webster
Principal Associate Director
Weapons Programs

 Plutonium Science & Manufacturing Assoc. Director Jeff Yarbrough	 Weapons Engineering & Experiments Assoc. Director John Benner	 Weapons Physics Assoc. Director Michael Bonadini
ADPMS Integrated Program Management	ADW Explosive Science and Shock Physics	ADX Advanced Simulation & Computing Program
Manufacturing Engineering & Technology	Integrated Weapons Experiments	Neural Computation Facility
Manufacturing Quality	Weapons Systems Engineering	LANS IR
Nuclear Component Operations		Science Campaigns
Nuclear Process Infrastructure		Weapons Research Services
Isotopics Production		X Computational Physics
Sealing Institute		X Theoretical Biology
TA-55 Protected Area Vehicle Access		


Terry Wallace
Principal Associate Director
Global Security

		
Threat Identification & Response Assoc. Director Nancy Jo Nicholas		
AUTR Analysis, Intelligence and Technology	CTO Expansive Center for Innovation	GS Programs Defense & Nuclear Counterterrorism
Intelligence and Space Research		Intelligence & Emerging Threats
Defense Engineering & Experimentation		Weapons Neutralization & Security
Sensitive and Special Operations		Nuclear Counterproliferation Program
Office of Counterintelligence	Program Support Office	


Craig Leasure
Principal Associate Director
Operations & Business

 Business Innovation Assoc. Director Carolyn Zerkle	 Environment, Safety, & Health Assoc. Director Michael Brandt	 Nuclear & High Hazard Operations Assoc. Director Cheryl Cabbell	 Mission Assurance, Security, & Emergency Response Assoc. Director Michael Lansing
ACBI Acquisition Services Management	ADSH Environmental Safety & Health	ADMSHQ Facilities & Waste Management Facility Operations	ADMSER Safety
Engineering & Computing Services	Occupational Safety and Health (Medical Division)	LANSCE Facility Operations	Security
Human Resources	Radiation Protection	Science & Technology Operations	Quality & Performance Assessment
Network and Infrastructure Engineering	Waste Management	TA-55 Facility Operations	Identity & Emergency Operations
Service Infrastructure	Employed Facilities	Utilities & Institutional Facilities	
Software & Applications Engineering	Employed Services	Weapons Facility Operations	Engineering Services
Operations Integration Office		Fire Protection	
		Nuclear Criticality Safety	
		Operations Support	
		Safety Basis	
		Training Services	


Larry Simmons
Principal Associate Director
Capital Projects

	
Project Management	
Assoc. Director Kim Cassers	
Photocopy Strategy Infrastructure	ACPM Logistics
	Business and Site Services
	Capital Projects
	TA-55 Relocation
	Shannon FOG Projects
	FAFCAP Facilities

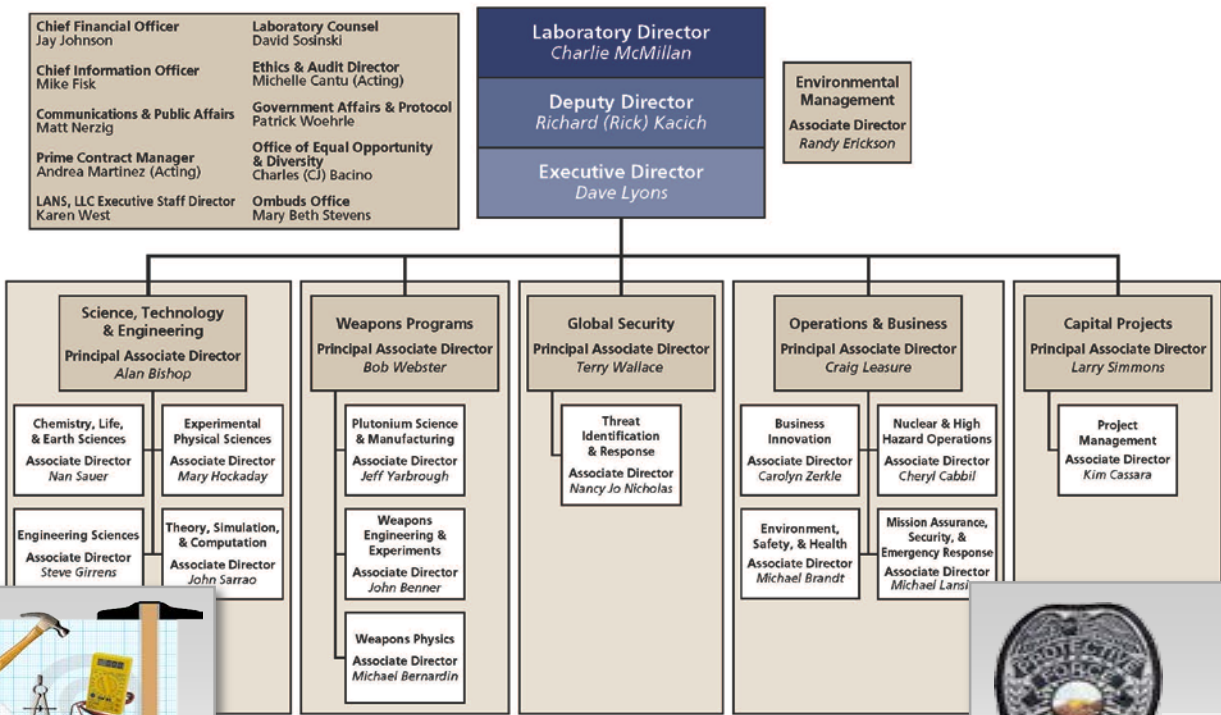
General Employee Training: Introduction to the Laboratory

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Working Together

1-5



**Support
Services
Subcontractors**

**LANL
Protective
Force**



Self-Assessment Time

Introduction to the Laboratory

Institutional Quality Assurance



You Will Learn

2-1

- **what quality means and why it is important;**
- **that the Laboratory's Institutional Quality Assurance Program results in work that meets safety, security, operational, and customer requirements; and**
- **your responsibilities for quality at the Laboratory.**



What Is Quality

2-1

- Los Alamos National Laboratory defines quality as *a condition achieved when an item, service, or process meets or exceeds the user's requirements and expectations.*
- Quality is meeting your customer's requirements and expectations.
- Los Alamos National Laboratory has contractual requirements to ensure quality in all operations.



Examples of a Lapse in Quality

2-1



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The Cha





Institutional Quality Assurance

2-1

The Institutional Quality Assurance Program is the Laboratory's documented program of good practices for performing activities in

- a controlled manner,
- in accordance with technical standards, and
- in accordance with operational safety requirements.

For more information, see *LANL Quality Assurance Program, SD330*.



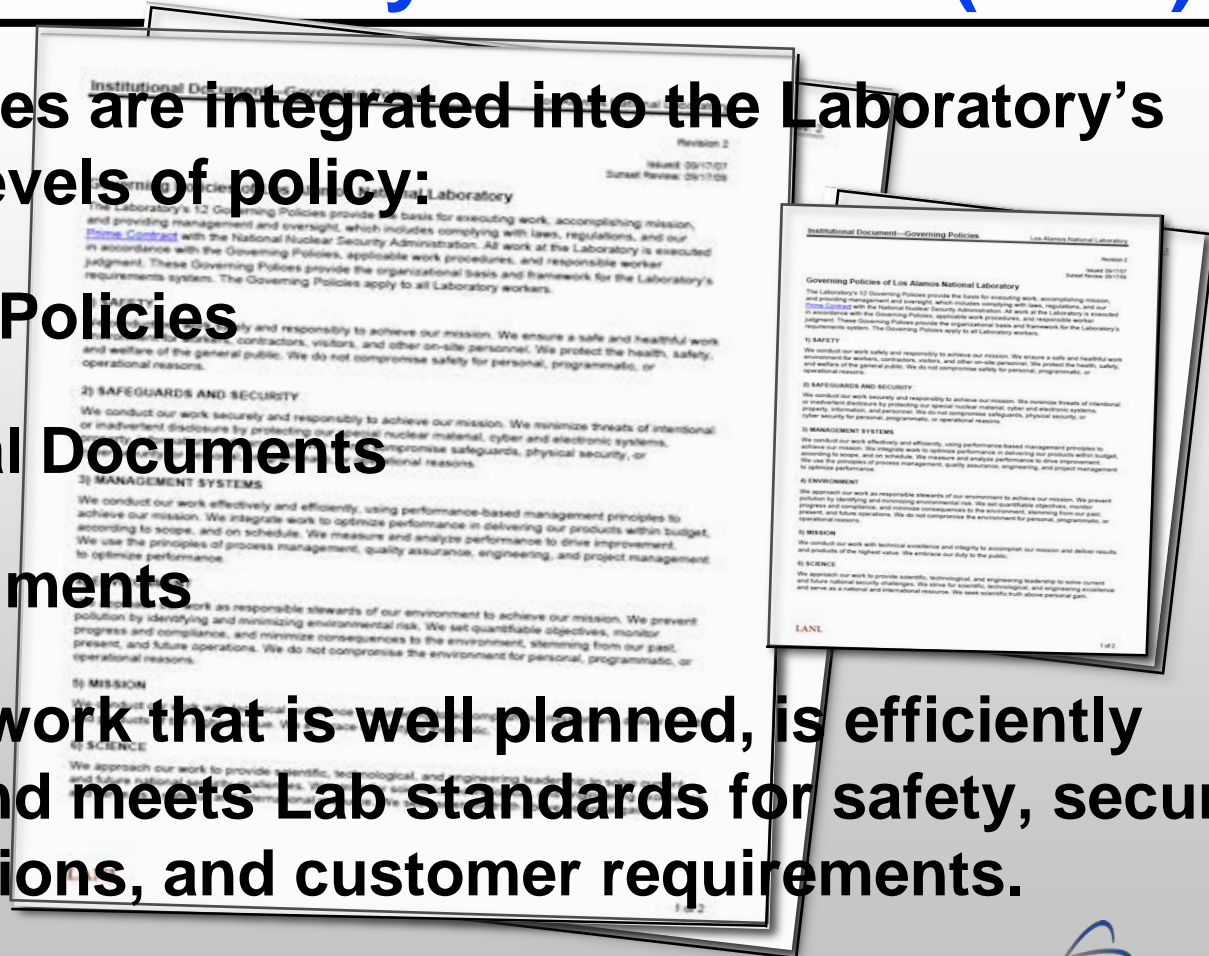
Institutional Quality Assurance (cont)

2-1

These practices are integrated into the Laboratory's three tiered levels of policy:

- Governing Policies
- Institutional Documents
- Local Documents

The result is work that is well planned, is efficiently performed, and meets Lab standards for safety, security, formal operations, and customer requirements.





Three Tiered Levels of Policy

2-2

Hierarchy of Requirements System Documents			
Purpose	Applicability	Issuing Authority (IA)	Content
<i>Governing Policies</i>			
Policy Statements	Institution	Laboratory Director (DIR)	High-level policy framework.
<i>Institutional Documents</i>			
System or Program Descriptions	Institution	DIR or Principal Associate Director (PAD)	Institutional management system or institutional program.
Procedures	Institution	DIR, PAD, or Associate Director (AD)	Institutional document describing to the manager and/or worker how work is to be performed.
Requirements Notices	Institution	DIR, PAD, or AD	Urgent, short-term requirements that expire within 1 year from date of issue.
<i>Local Documents</i>			
Local Instructions or Functional Series Documents	Limited	DIR, PAD, or AD, Facility Operations Directors, Division Leader, or Group Leader	A local practice with a limited application, or work requirements by or for specific organization(s) to perform a specific function.

How Is Quality Managed?

2-2

- **Planning work to ensure that it is performed by qualified workers using approved processes, codes, and standards**
- **Conducting work only after risks to workers, the public, and the environment are formally analyzed and reduced**
- **Reporting abnormal events and occurrences**
- **Assessing work processes and results to improve process effectiveness and product quality**



What Is Important

2-2

- **Clear identification of roles, responsibilities, and interfaces**
- **Trained and qualified workers**
- **Aggressive identification and correction of problems**
- **Use of current resource documents and well-maintained records**
- **Following work policies, plans, and procedures**
- **Clearly specified design requirements**



What Is Important (cont)

2-2

- **Effective communication of requirements to suppliers**
- **Requiring inspections, tests, and verification documents**
- **Management evaluation of progress against objectives**
- **Conducting audits and assessments to ensure compliance**
- **Evaluating, characterizing, and managing software to ensure compliance**



Your Responsibilities

2-2

Success depends on you!

- Complete required training
- Analyze and manage hazards and risks in your daily work
- Follow approved policies, plans, and procedures
- Assess your work processes and products to promote improvement
- Have a questioning attitude. If you see something that may not meet quality requirements, bring it to the attention of your management



Self-Assessment Time

Institutional Quality Assurance

Facilities



You Will Learn

3-1

- the geographic setting and layout of the Laboratory
- about Laboratory building designations
- about parking limitations



Aerial View of Los Alamos

3-1





Laboratory Land

3-1

The 36 square miles of Laboratory property is divided into technical areas

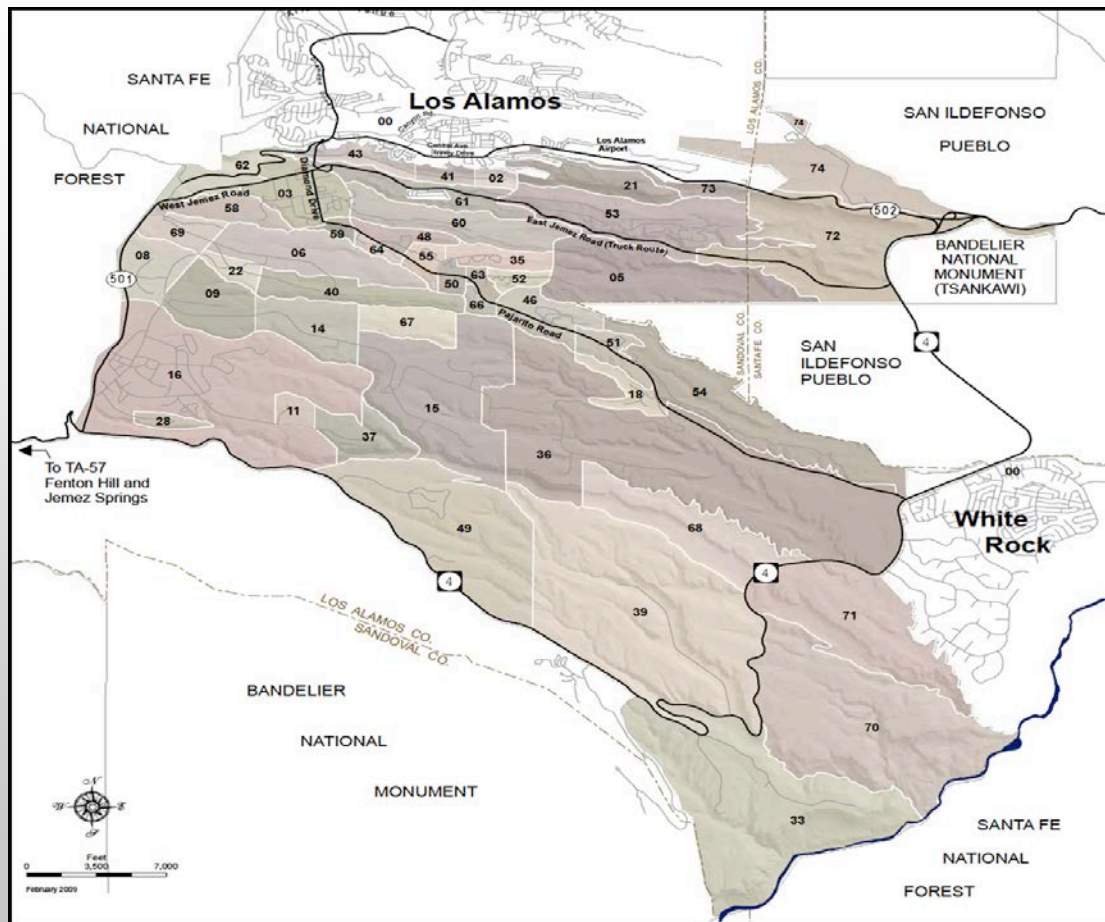
- Technical areas are grouped into areas run by FODs
- Each building has a facility manager, a building manager, and a facility coordinator who can assist you
- Make sure you are familiar with the work processes in your facility.

Note: Access Laboratory property through designated points only. Do not cross Laboratory fences.



Technical Areas

3-2





Building Designations

3-3

Each building has a technical area number and building number designation posted on an outside wall and sometimes on a sign.







Your Location

3-3

- Make sure your telephone is labeled with your building designation
- If you move a VOIP phone, contact tcateam@lanl.gov
- Use your assigned mail stop (MS) for correspondence
- Keep your contact information current in EIS



Note: The Laboratory encourages the use of e-mail for official business.



Parking

3-4

Parking is very limited in some areas. Plan ahead and use

- **the LANL taxi service (7-TAXI) shuttle and dispatch**
- **the Park and Ride commuter bus service**
- **the Atomic City Transit bus system**
- **the SECA Van Pool Service and Carpool New Mexico**

For more information, go to the Commuter's Corner.

Note: Illegal parking on Lab property is subject to citations, fines, and towing.



Self-Assessment Time

Facilities



Policies, Procedures, and Other Requirements



You Will Learn

4-1

The Laboratory's governance model and policies on

- **Nondiscrimination, equal opportunity, affirmative action, and diversity**
- **Conflict of interest**
- **Government property**
- **Political activities**
- **Gambling**
- **Smoking**
- **Workplace violence**
- **Harassment prevention**
- **Reporting improper activities**

Governance Model

4-1

LANL is managed and operated by LANS under a performance-based contract with the DOE/NNSA.

- **The Lab is required to demonstrate that we are**
 - **operating safely, securely, and efficiently**
 - **continuously improving and providing more mission work for taxpayer dollars**
- **The Laboratory uses a single, consolidated requirements system to help us perform work consistently and efficiently in accordance with the Prime Contract and its Governing Policies**

The Policy Center

4-3

The screenshot shows the LANL Policy Office website. The browser address bar displays 'https://int.lanl.gov/policy/'. The website header includes the LANL logo and a navigation menu with links: Computing, Employees, Environment, Finance, News, Safety, Science, Security, and Services. A sidebar on the left contains a 'Policies' section with a 'Collections' link highlighted by a red circle. Below this are links for 'Policy Owners', 'Change Management', and 'Archived Documents'. Further down is a 'Search for Requirements' box with a search button. At the bottom of the sidebar is a 'Submit Policy Ticket' section with a 'Submit' button. The main content area is titled 'Policy Office: Policies, Procedures, Documents'. It contains an introductory paragraph about the requirements system and hierarchy, followed by a diagram titled 'LANL REQUIREMENTS SYSTEM AND HIERARCHY'. The diagram shows a hierarchy starting with 'Governing Policies' (linked to 'Governing Policies (pdf)'), which leads to 'Institutional Documents'. These include a list of 12 items: 1. Safety, 2. Safeguards and Security, 3. Management Systems, 4. Environment, 5. Mission, 6. Science, 7. Human Resources, 8. Assets Management, 9. Facilities Management, 10. Information Management, 11. Good Neighbor, and 12. Emergency Management. Below 'Institutional Documents' are 'Local Documents', which are divided into 'Functional Series Documents' (described as cross-directorate lines of authority) and 'Local Instructions' (described as not crossing directorate lines of authority). The diagram concludes with a note: 'Work requirements for specific workers or organizations with limited application'.

Nondiscrimination/EO/AA/Diversity 4-2

- The Laboratory is committed to a work environment where all employees can reach their full potential.
- See PD 712, *Equal Employment Opportunity, Affirmative Action, and Diversity*.





Conflict of Interest

4-4

- The Laboratory seeks to avoid conflict-of-interest situations.
- Conflict of interest may involve actual conflict of interest or the appearance of conflict of interest in
 - Outside employment
 - Gifts, entertainment, favors, and kickbacks
 - Privileged information
 - Contracts
- See PD801-1, *Ethics Program*; P832-1 *Conflict of Interest: Technology Transfer*; and P723 *Conflict of Interest*



Government Property

4-5

- All Laboratory facilities, grounds, supplies, and equipment, including surplus or salvage material, are US government property.
- You may use government property, including vehicles, for official use only. To drive a government vehicle, you must be at least 18, possess a valid driver's license, and have no special driving restrictions.
- See P821, *Government Property*





Political Activities

4-6

- You may discuss politics at the Lab if it does not interfere with your work and you make it clear that you are giving your personal opinion.
- Your participation in political activities on your own time is your business. However, you may not campaign, nor may you solicit or accept political contributions on Laboratory premises.
- See P725, *Political Activities and Interactions with Elected Officials*





Gambling

4-7

- You may not gamble on Laboratory premises, nor may you use Laboratory equipment to gamble
- See P731, *Discipline*





Smoking

4-7

You may not smoke, including e-cigarettes, in government vehicles or inside Laboratory buildings

- Smoking is prohibited within 25 feet (horizontal and vertical) of doors, operable windows, and intake vents of LANL buildings**
- Smoking is prohibited inside offsite space leased by LANL**
- Smoking outdoors is conditionally allowed (but please remember our regular fire danger)**

See P909, *Smoking and Smokeless Tobacco*



Workplace Violence

4-7

- **Violent behavior and threats of violence are unacceptable conduct and are prohibited at the Laboratory.**
- **Examples include**
 - **Hostile or aggressive physical contact**
 - **A statement or body gesture that threatens harm**
 - **A course of conduct that would cause a reasonable person to believe that he or she is under threat**
- **Call 911 if necessary**

See P724, *Workplace Violence*



Harassment Prevention

4-8

The Laboratory is committed to providing a work environment free from all forms of harassment on the basis of sex or any other legally protected category.

- Sexual harassment is unacceptable conduct and is prohibited at the Laboratory**
- The Laboratory expressly prohibits sexual relations between a supervisor/mentor and subordinate/mentee, regardless of whether it is coerced or consensual**

See P721, *Harassment, Including Sexual Harassment*



Reporting Improper Activities

4-8

The Laboratory encourages reporting improper activities, including waste, fraud, abuse, and violation of Laboratory policies. You may report by

- **talking to your line manager**
- **calling the Lab's ECP 24-hour helpline at 665-9999**
- **calling EA-Ethics at 667-4257**
- **sending email to ecp@lanl.gov**
- **writing to the Helpline at MS D449**
- **meeting with EA-Ethics personnel**

See P793, *Employee Concerns Program*



Self-Assessment Time

Policies, Procedures, and Other Requirements



Safety Expectations



You Will Learn

5-1

- 1. Laboratory values**
- 2. How safety, security, environment, and quality are integrated with work activities through the Integrated Safety Management System (ISMS)**
- 3. How Laboratory requirements are documented**
- 4. Your responsibilities for safety**
- 5. The requirement to stop work when an activity presents a safety concern**
- 6. How to report safety concerns**



Laboratory Safety Policy and Values

5-1

- **Conduct work safely and responsibly**
- **Ensure a safe and healthful working environment for all onsite personnel**
- **Protect the health and safety of the general public**
- **Never compromise safety or security for personal, programmatic, or operational needs**
- **Operate facilities in a manner that enables us to perform work safely and securely**
- **Know that all accidents and security incidents are preventable**

General Employee Training: Safety Expectations

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ISMS

5-1

- Includes safety, health, security, quality, and environment
- Is the overarching framework that the Laboratory uses to manage the conduct of work
- Was established by DOE Policy 450.4 *Safety Management System Policy*
- Applies to all workers—LANL employees, contractors, subcontractors, and visitors



Guiding Principles

5-2

- **Line management responsibility for safety**
- **Clear roles and responsibilities**
- **Competence commensurate with responsibilities**
- **Balanced priorities**
- **Identification of safety standards and requirements**
- **Work-tailored hazard controls**
- **Operations authorization**
- **Worker involvement**



Take 5 for Safety and Security

5-2



General Employee Training: Safety Expectations

GET_15503_VG2,R7.5



Voluntary Protection Program

5-2

- The DOE-VPP promotes excellence in occupational safety and worker health across the DOE complex.
- VPP strengthens Worker Involvement and Management Commitment principles.
- Worker involvement is the key to success.
- Worker Safety & Security Teams (WSSTs) enable employee participation.





VPP Employee Involvement

5-2

- Every worker is represented by a Worker Safety and Security Team member.
- The mission of the team is to improve safety and security through direct involvement of all workers.
- You are encouraged to meet your Worker Safety and Security Team representative and participate in improving safety and security.
- See the Worker Safety and Security Team and VPP websites for more information.

WSST



Safety Requirements

5-3

Safety requirements are established for

- **The entire Laboratory**
- **Each facility**
- **All work activities**



Laboratory-Wide Requirements

5-3

Laboratory-wide requirements are defined in

- **System descriptions (SDs)**
- **Program descriptions (PDs)**
- **Procedures (Ps)**
- **Requirement notices (RNs)**

These institutional documents are located in the online Policy Center.



Local Documents

5-3

Functional series documents and local instructions define

- **processes,**
- **operations,**
- **other information**

to perform certain work.

See PD311, *Requirements System and Hierarchy*



Manager Responsibilities

5-3

- **Approve the activity-specific part of integrated work documents (IWDs) based on evaluating the adequacy of controls.**
- **Determine the competence and commitment of workers to perform work assignments in a safe, secure, and environmentally responsible manner.**
- **Authorize workers as appropriate.**
- **Monitor work to ensure that it is done in a safe, secure, and environmentally responsible manner.**



Your Responsibilities

5-3

- **Ensure that your work is approved.**
- **Maintain required training and qualification.**
- **Contribute to defining work, identifying hazards, and establishing controls that are workable.**
- **Perform work in a safe, secure, and environmentally responsible manner and in accordance with requirements.**
- **Stop work when hazards change or when you encounter unexpected work conditions.**
- **Use lessons learned to make improvements.**
- **Frequently check to ensure that controls are effective.**



Pause/Stop Work and Restart Policy 5-3

You have the authority and responsibility to pause or stop work when an activity presents a safety or security concern.

Work must not continue until the concern is resolved.





Pausing Work

5-3

- If you observe an unsafe condition, inform all workers and the manager engaged in that work and request that the work activity be paused.
- If the concern can be resolved immediately and to the mutual satisfaction of the workers involved, no reporting or further action is required.



Stopping Work

5-4

- If the condition is determined to be NOT readily fixable, contact the responsible line manager/designee as soon as possible.
- Declare an official “Stop Work.”
- Proceed with the Stop Work requirements of the *Procedure for Pause/Stop Work*, P101-18.



Retaliation is Prohibited

5-4

The Laboratory prohibits retaliation against workers for stopping work for safety or security reasons.

- If you are a Laboratory employee, report retaliation to your supervisor, call the Employee Concerns Program at 5-9999, or send an e-mail to ecp@lanl.gov**
- If you are a contract worker, report retaliation to your employer, call the Employee Concerns Program at 5-9999, or send an e-mail to ecp@lanl.gov**



Reporting a Safety or Security Concern 5-4

- **Notify your supervisor**
- **Call the Safety Help Desk at 5-7233 or safety@lanl.gov**
- **Contact the Employee Concerns Program at 5-9999 or ecp@lanl.gov**
- **Contact the Security Help Line at 5-2002 or security@lanl.gov (unclassified only)**

Note: Contacts for specific safety concerns are listed on the LANL homepage under “Safety”



Using the Quick Reference Badge

- Lists emergency and operational phone numbers
- Fill in local help numbers
- Check numbers periodically for changes
- Wear it with your badge

Stopping Work	
Workers will stop in the event of a hazardous or unsecure condition.	
Lab-Wide Help	
Safety Help Desk.....	5-7233
Security Help Desk.....	5-2002
Update 667-6622/1877-723-4101	
Local Help	
Supervisor _____	
Org. _____	
Cost codes _____	
Building Mgr _____	
FOD _____	
RCT _____	
WMC _____	
WSST Rep _____	
CT-ITS	June 2010

In an Emergency
Call 911 then EO at 7-6211
Notify your line management
For Nonemergency Concern
Call your facility manager or
Emergency Operations 7-6211
Employee Concerns 5-9999
Operational Support
Environment7-2211
Industrial Hygiene.....7-5231
Industrial Safety.....7-3363
Occupational Medicine 7-7890
24 hr emergency help 7-0660
Packaging & Transportation
Operations Center.....4-0765
Radiation Protection.....7-7171
WasteHelp@lanl.gov....5-2494



Self-Assessment Time

Safety Expectations



Worker Protection: Occupational Safety and Health

You Will Learn

6-1

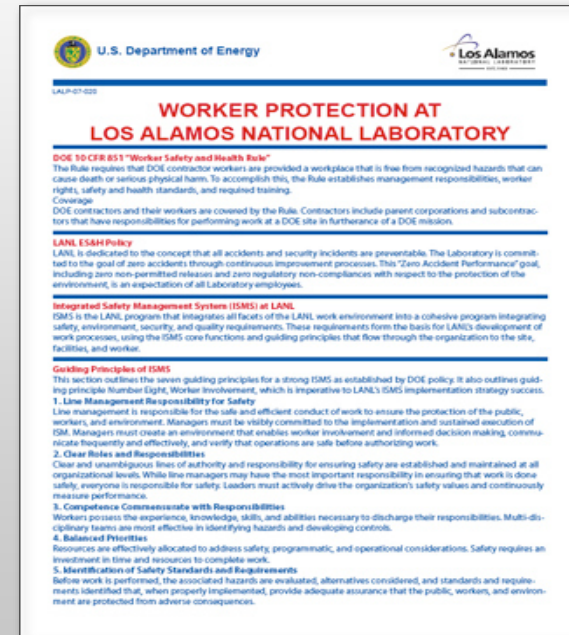
- that the Worker Safety and Health Rule requires that DOE contractor workers be provided a workplace free from recognized hazards
- the Laboratory management responsibilities for worker safety and health
- your rights as a Laboratory worker concerning safety and health
- your responsibilities as a Laboratory worker regarding safety and health



Worker Safety and Health Rule

6-1

- DOE 10 CFR 851 requires that LANL workers be provided with safe and healthful workplaces
- LALP-07-020 describes the Lab's implementation of 851





Laboratory's Responsibilities

6-1

LANL and subcontractor management have the responsibility to

- **establish written safety and health policy and goals**
- **provide ways to involve workers in the safety and health program**
- **establish procedures for workers to report hazards and stop work**
- **use qualified safety and health professionals**
- **comply with workplace safety and health requirements**
- **hold workers accountable for ES&H performance**



Your Rights

6-2

- To notify the Laboratory or DOE office about workplace hazards without reprisal (you may ask that your name not be used)
- To express concerns related to worker protection
- To decline to perform tasks that pose imminent risk
- To have access to DOE and workplace worker-protection publications
- To observe monitoring, have access to the results, and be notified if you were overexposed to hazardous materials



Your Rights (cont)

6-2

- To receive results of inspections and accident investigations upon request
- To have access to some accident and illness logs and records concerning you
- To have a representative accompany the DOE's Director for Enforcement during authorized inspections of your workplace
- To participate in "Worker Safety and Health Rule" activities on official time

Note: You may file a safety concern anonymously at the Safety Help Desk at 5-SAFE (5-7233), DOE/NNSA LAFO (7-5105 or by mail at MS A316), or the DOE ECP 24-Hour Hotline at 1-800-688-5713.



Your Responsibilities

6-2

- **Comply with worker safety and health requirements**
- **Report hazardous conditions to your supervisor promptly**
- **Respond to emergency signals**
- **Report emergencies immediately**
- **Perform all work safely**
- **Stop work if you believe an activity is hazardous to workers or the environment**



Self-Assessment Time

Worker Protection: Occupational Safety and Health



Industrial Hygiene and Safety



You Will Learn

7-1

- the roles of industrial hygiene and safety in the workplace
- the types of workplace hazards and their potential impacts
- that unsafe work practices can create hazardous conditions
- about work planning methods used at the Laboratory
- about the methods used to evaluate and control hazards
- about the services of industrial hygienists and safety engineers



Industrial Hygiene and Safety

7-1

Industrial hygiene and safety involve the anticipation, recognition, evaluation, and control of workplace hazards that can cause illness, discomfort, injury, or death.

- **Industrial hygiene focuses on health hazards**
- **Industrial safety focuses on physical hazards**



Occupational Safety and Health

7-1

OSH Division supports you and your managers for a safe and healthy workplace.

- **For help with institutional health and safety issues and regulatory compliance issues, contact the Safety Help Desk at 665-7233 (665-SAFE) or safety@lanl.gov**
- **Make it a point to meet deployed health and safety professionals in your area and use their services early in the 5-step process.**



Governing Agencies

7-1

OSHA Occupational Safety and Health Administration

ANSI American National Standards Institute

NIOSH National Institute for Occupational Safety and Health

ACGIH American Conference of Governmental Industrial Hygienists

DOE Department of Energy

Go to the online Policy Center to see LANL's implementation requirements for health and safety.



Types of Health Hazards

7-2



- Chemical hazards



- Physical hazards



- Biological hazards



- Ergonomic factors



Types of Physical Hazards

7-2



- Physical environment



- Hazardous energy sources



- Mechanical hazards



- Process hazards



Unsafe Work Practices

7-2

- Improper use of equipment
- Use of equipment without required training
- Use of improperly maintained equipment
- Failure to use required PPE
- Failure to follow established procedures
- Failure to stop or pause work when unexpected changes or conditions occur





Types of Accidents, Injuries, and Illnesses 7-2

Accidents, injuries, and illnesses can result from

- being struck
- contact by a harmful substance
- contact with a harmful object
- getting caught
- falling
- overexertion
- exposure

Which of these could potentially happen in your work area?



Work Planning Methods

7-3

All work at the Laboratory must follow the requirements in P300, *Integrated Work Management*, and related work control documents, which outline how to

1. define work
2. analyze hazards
3. develop controls
4. perform work
5. evaluate performance of work



Integrated Work Document

7-3

The work planning method used to help meet these requirements is the IWD, which has the following parts:

- **Part 1—Activity-Specific Information**
- **Part 2—Work Area Information**
- **Part 3—Validation and Release Information**
- **Part 4—Closeout Information**



Principles of Industrial Hygiene and Safety⁷⁻³

- **Anticipation**
- **Recognition**
- **Evaluation**
- **Control**



Recognition and Evaluation of Hazards

7-3

- **Recognition**
 - Hazards in work areas
 - Hazards in work activities
- **Evaluation**
 - Quality: What is the hazard?
 - Quantity: How much?



Methods of Hazard Control

7-4

Control hierarchy:

- Elimination
- Substitution
- Engineering controls
- Administrative controls
- PPE



**Note: PPE will be supplied for your work.
Do not bring PPE from home.**



Industrial Hygiene Programs

7-4

- Asbestos, beryllium, and lead work
- Confined spaces
- Chemical hazard communication, chemical hygiene, chemical storage
- Hearing conservation, respiratory protection, PPE
- Noise and temperature stress
- Biosafety, including bloodborne pathogen protection
- Ergonomics
- Specific hazards: carcinogens, toxic materials, nonionizing radiation



Industrial Safety Programs

7-5

- **Electrical safety**
- **Laser safety**
- **Explosives safety**
- **Construction safety**
- **Machine shop safety**
- **Pressure safety**
- **Lockout/tagout**
- **Vehicle and pedestrian safety**
- **Forklift and crane safety**
- **R&D firearms safety**

General Employee Training: Industrial Hygiene and Safety

GET_15503_VG2,R7.5



Electrical Safety

7-5

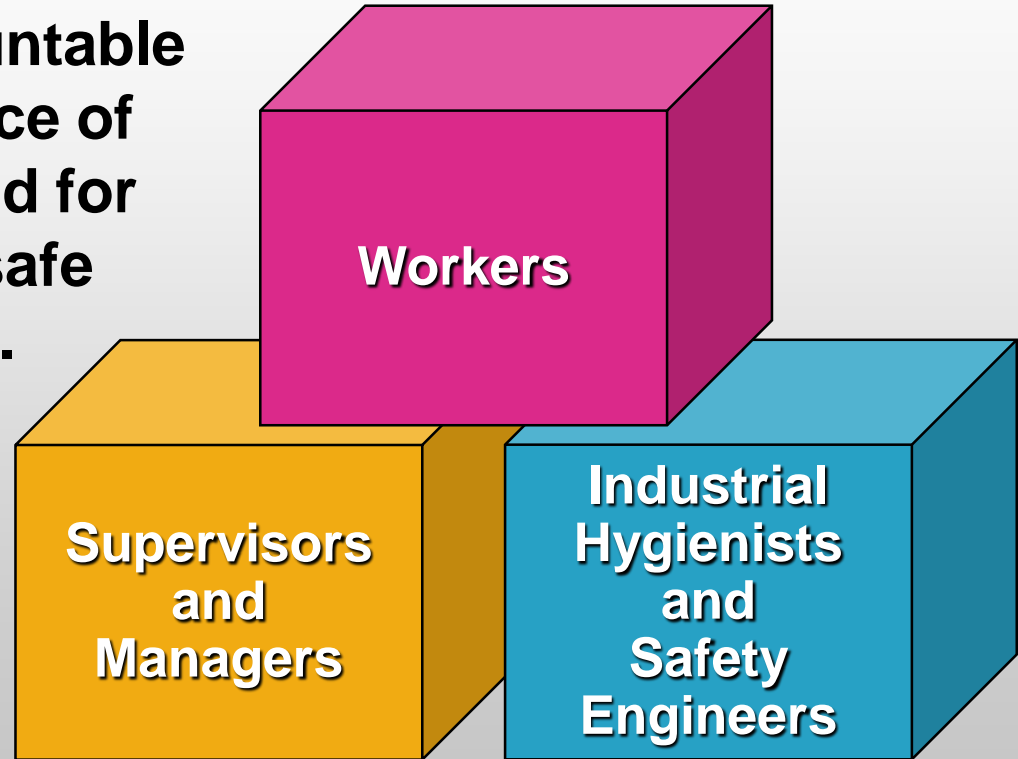
- Do not assume that the energy source is too small to hurt you
- Do not assume that equipment is turned off
- Turn off equipment before disconnecting it and before attempting to unjam or repair it
- Disconnect equipment by the plug, not by the cord
- Do not use equipment with frayed cords or wires
- Use properly grounded (three-prong) plugs
- Do not “daisy-chain” extension cords or use them in place of permanent wiring
- Do not overload electrical outlets or circuits
- Keep electrical equipment, outlets, and other power supplies clear of obstructions and away from plants and beverages



Responsibilities

7-5

As a worker, you are responsible and accountable for the safe performance of your work activities and for helping to maintain a safe and healthy workplace.





Office Safety





Self-Assessment Time

Industrial Hygiene and Safety

Lockout/Tagout

You Will Learn

8-1

- the definitions of lockout, tagout, and affected and authorized workers
- when a LO/TO procedure is being used
- the purpose of the LO/TO procedure, and the importance of not attempting to start up or use equipment that is locked/tagged out
- about Laboratory-issued locks and tags
- your responsibilities regarding lockout/tagout
- about violations of lockout/tagout procedures, which are serious offenses punishable by disciplinary action

General Employee Training: Lockout/Tagout

GET_15503_VG3,R7.5

Why LO/TO?

8-2



Why LO/TO?

8-2

Because every year people are injured, maimed, and killed in accidents.

- **Either they have failed to disconnect the power source of machinery they are working on or**
- **A fellow worker has restarted equipment, not knowing anyone was in harm's way.**

Lockout

8-2

Lockout is placing a lock on the device that controls the equipment.



- A lock is never used without a tag.
- The tag provides information such as who placed the lock and the duration of the task.

Tagout is used only in circumstances where a lock cannot be used



Who Is an Affected Worker?

8-2

An affected worker is anyone who operates, uses, or works near equipment, machinery, or systems that are being serviced, maintained, or modified and that require lockout/tagout.

Who Is an Authorized Worker?

8-2

An authorized worker is anyone who

- **locks out and tags out equipment to perform service or maintenance,**
- **has completed LANL LO/TO training, and**
- **has been authorized by his/her responsible line manager.**

Why Is Lockout/Tagout Important to You? 8-3

Lockout/tagout is important to you because

- **“affected” workers must receive training**
- **awareness of lockout/tagout will help prevent workplace injuries**

What Is Locked Out?

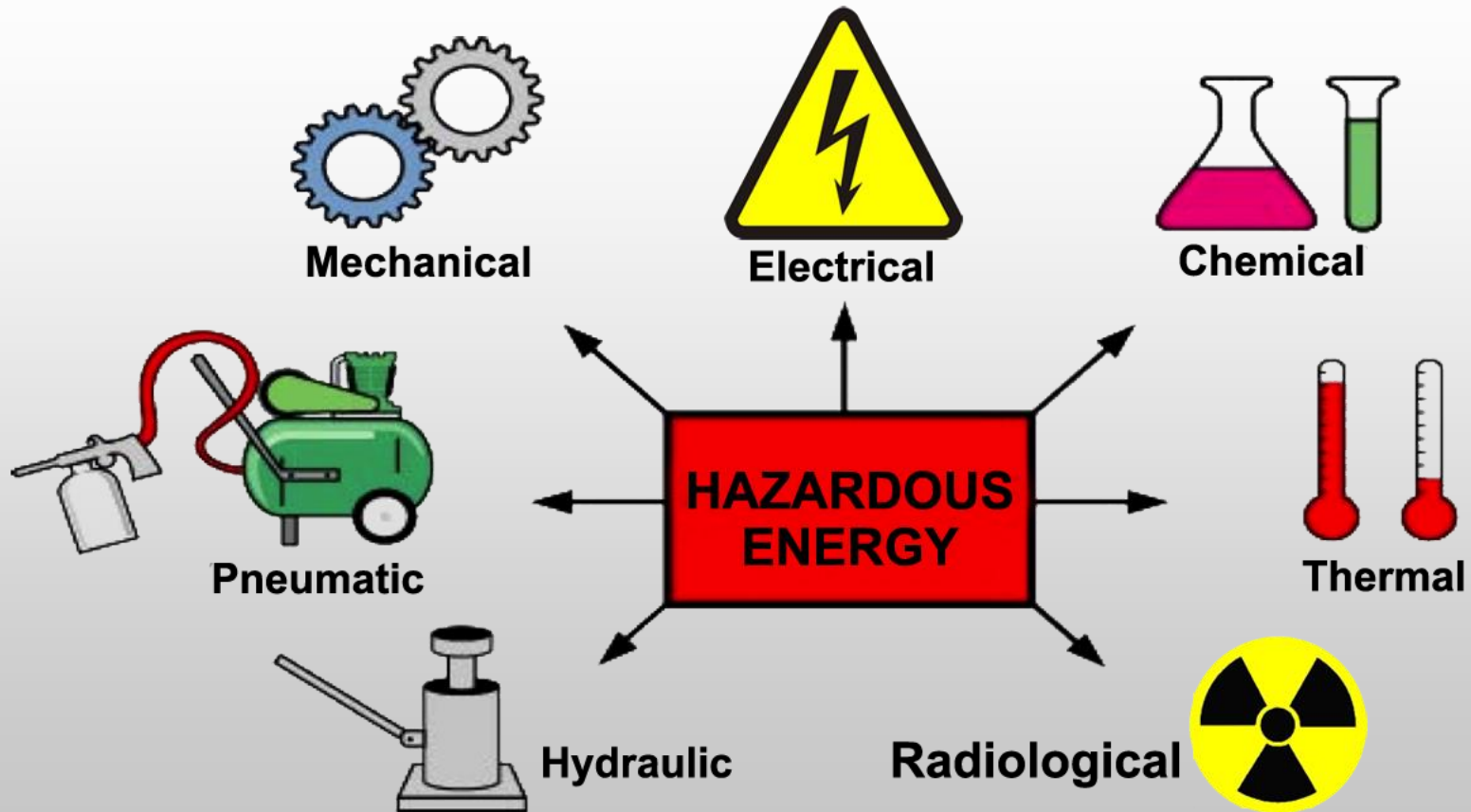
8-3

- Equipment
- Machines
- Systems



Types of Energy Sources

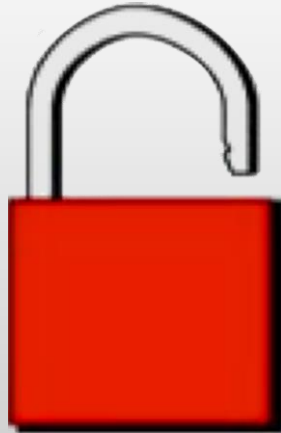
8-3



Types of Locks and Tags

8-3

Red for personal safety



**DANGER
DO NOT OPERATE**

☐ LANS Employee
☐ Subcontractor

TAG ID: _____

Name (authorized person) _____

Phone _____ Z# _____

☐ Lead Authorized Person (check if designated as)

Start Work Date _____ Work Request# _____

Work to be performed _____

Location of Equip. _____

TA _____ Bldg _____ Rm. _____ Other _____

Equipment description _____

Energy Isolating Device _____
(panel #, disconnect, valve, etc.)

Isolating Device Position _____ for LO/TO

Is this a simple lockout/tagout? ☐ Yes ☐ No
(Yes if)

- there is only one energy source
- there is only one energy-isolating device must be locked out to fully control the energy
- the energy isolation device is readily identifiable
- the energy isolation device can be locked
- there is no potential for stored or residual energy in the machine
- no shift or personnel changes will occur
- workers performing the service or maintenance are from the same craft and organization/company
- the Facility Operations Director (FOD)/designee does not require independent verification

If YES, follow the procedure on the back of this tag.
If NO, complete and follow P101-3, Lockout/Tagout for Hazardous Energy Control, Attachment B, Specific Written Energy Control Procedure
Form 2002 p101-3 (8/2009)

ACCIFORM SIGNS REORDER# 642525-001

**DANGER
DO NOT OPERATE**

Simple Energy Control Procedure

1. Identify and evaluate all hazardous energies.
2. Obtain red lock and tag from teh FOD.
3. Notify the affected workers.
4. Perform normal shut down of equipment.
5. Isolate equipment from energy source(s).
6. Lock out and tag out equipment.
7. Relieve stored hazardous energy.
8. VERIFY the equipment has been effectively isolated from the energy source and rendered safe. (Zero Energy)
9. Perform the work (if applicable).
10. Release from Lockout/Tagout.

Simple from Lockout/Tagout

If your work is complete, but you will not be returning the equipment to service, notify the owner/operator (or lead authorized worker) before removing your lock/tag. If you are returning the equipment to service, do the following:

1. Check equipment and immediate area around it to ensure that nonessential items have been removed and equipment is ready for safe operation.
2. Check area to ensure that all affected workers are in a safe location or have been removed from the immediate area.
3. Verify that controls are in the neutral or "off" position.
4. Notify affected workers.
5. After affected workers have been notified,
 - obtain approval from equipment owner/operator to re-energize (if required);
 - remove lock and tag from energy-isolating device;
 - re-energize and test equipment or coordinate testing with owner/operator to ensure that equipment can be operated safely; and
 - return equipment to "ready for duty" status (if different from "test" state)
6. Inform FOD/designee of work completion, return red lock and equipment provided by teh FOD/designee or owner/operator.

Types of Locks and Tags

8-3

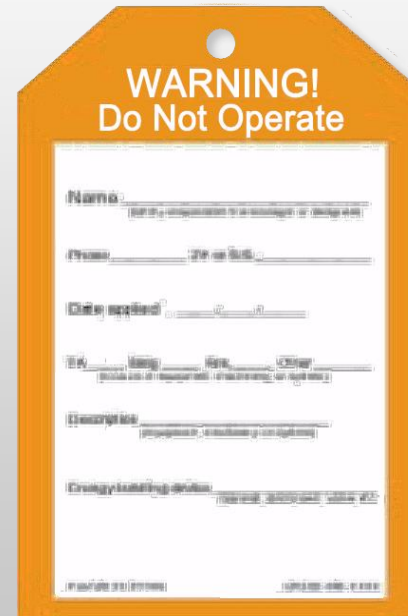
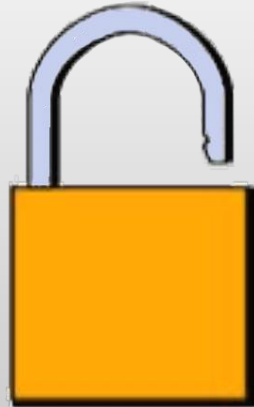
Red lockout/tagout on steam system



Types of Locks and Tags

8-3

You may also see locks of different colors; if so, treat them the same as you would a red lock.



Your Responsibilities for LO/TO

8-3

As an affected worker, you must

- **recognize Laboratory locks and tags**
- **never attempt to operate locked-out and/or tagged-out equipment**
- **never remove or bypass locks and/or tags**

Violations of LO/TO Procedures

8-3

Ignoring LO/TO procedures has serious consequences. Any violations of lockout/tagout procedures are subject to disciplinary action up to and including termination.

Self-Assessment Time

Lockout/Tagout

General Employee Radiological Training

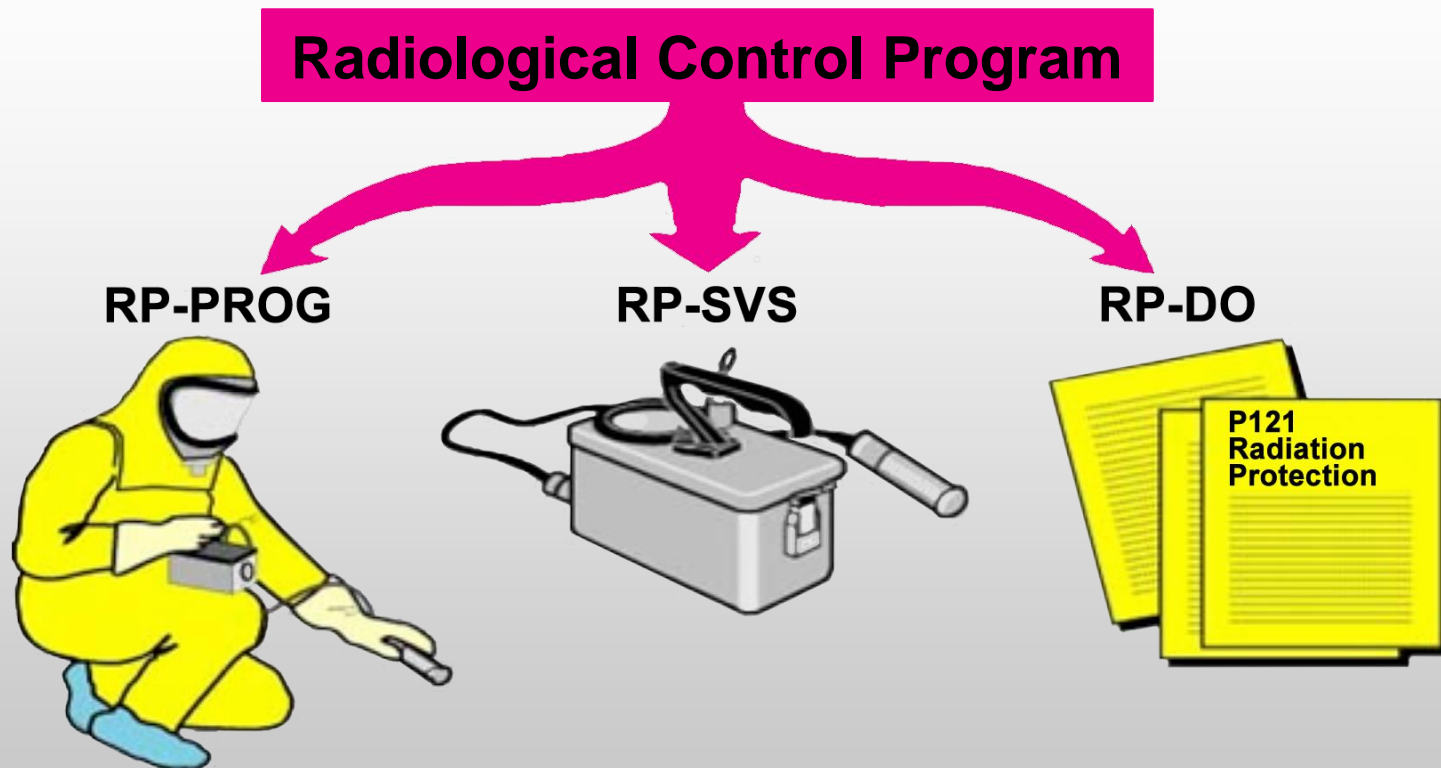
You Will Learn

9-1

- basic radiological terms
- sources of background ionizing radiation
- the biological effects of ionizing radiation and the risks of exposure
- how to report a pregnancy
- radiation dose limits for occupational exposure
- methods used to monitor workers' radiation doses
- the ALARA concept and the ways to decrease radiation dose
- the different radiological controls and postings
- managers' and workers' responsibilities for radiological protection
- emergency procedure information

Radiological Control Program

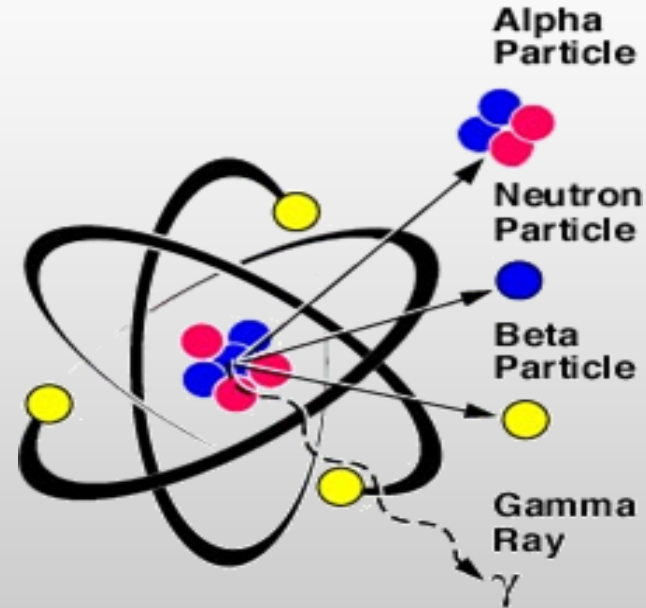
9-1



Radiological Terms

9-2

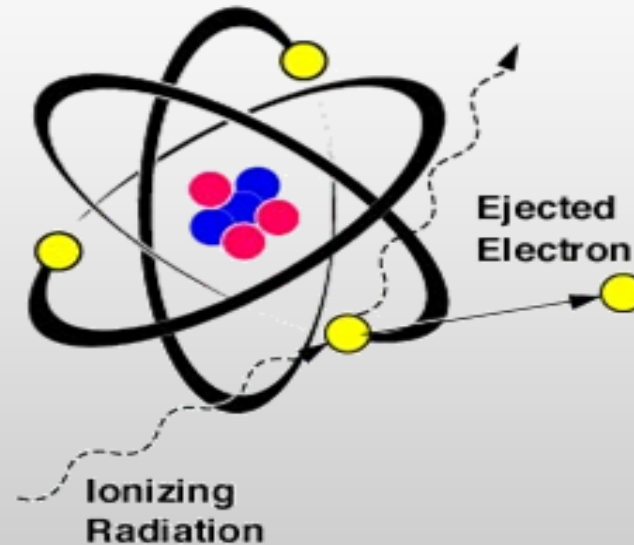
- Radiation
- Radioactivity



Radiological Terms

9-2

- Ionizing radiation
- Ionization



Radiological Terms

9-2

Contamination



External exposure to radiation



Radiological Terms

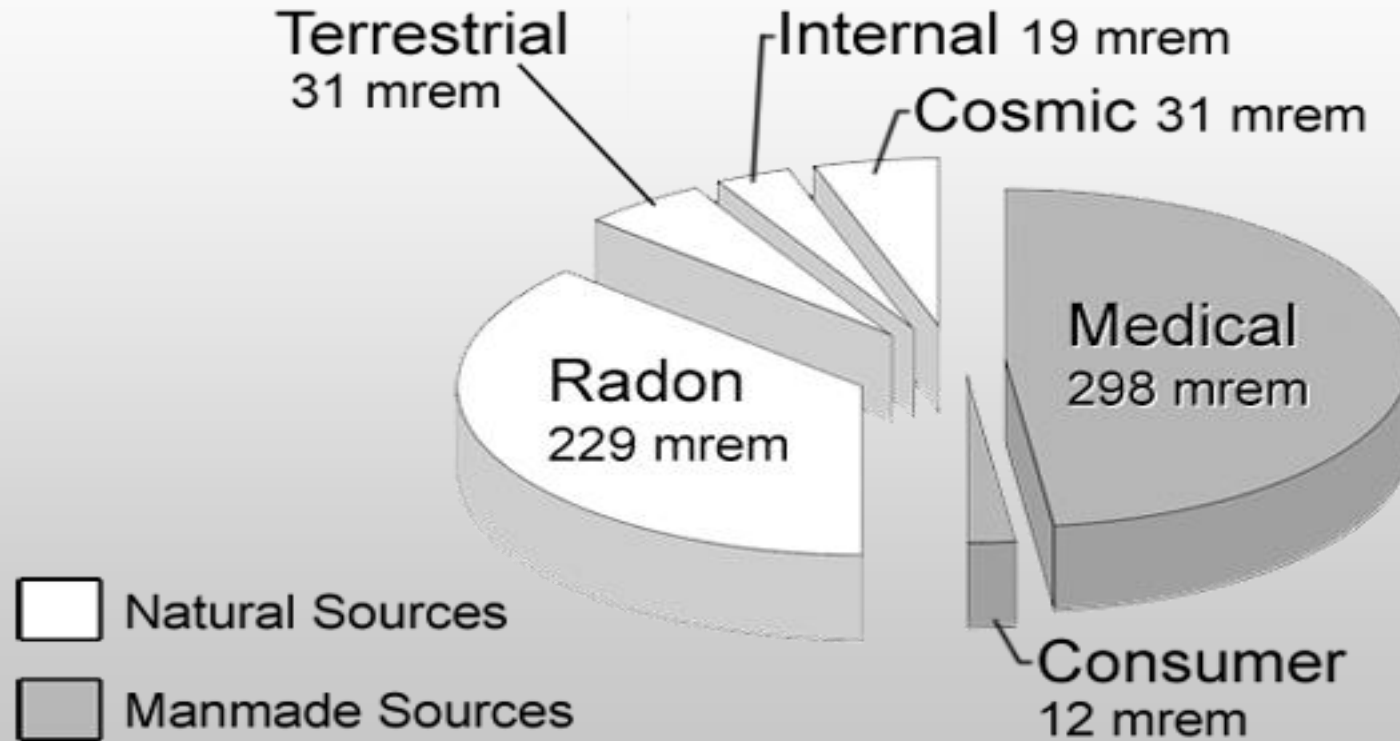
9-2

- **Dose** - the amount of radiation a person absorbs from both external and internal sources
- **Dosimetry** - the measurement of radiation dose (at LANL it is reported in “rem”s or “millirem”s)

Average Annual Background Dose

9-3

Average nationwide dose is **620 mrem**



Biological Effects

9-3

Radiation causes damage to any material by ionization of the atoms.

Radiation damage to the human body begins with ionization of the atoms in the cells.



Types of Biological Effects

9-4

- **Somatic effects**
 - Appear in the person exposed to radiation
- **Heritable effects**
 - Appear in the offspring of the person exposed to radiation

Risk Factors

9-4

- The type of radiation
- The dose received
- The period of time over which the dose is received
- The body part(s) that received the dose

Risks of Exposure

9-4

Chronic Exposure

- A dose of radiation received over a *long* period—from months to years
- A somatic effect from chronic, low-level exposure may be a slight increase in the risk of cancer



Acute Exposure

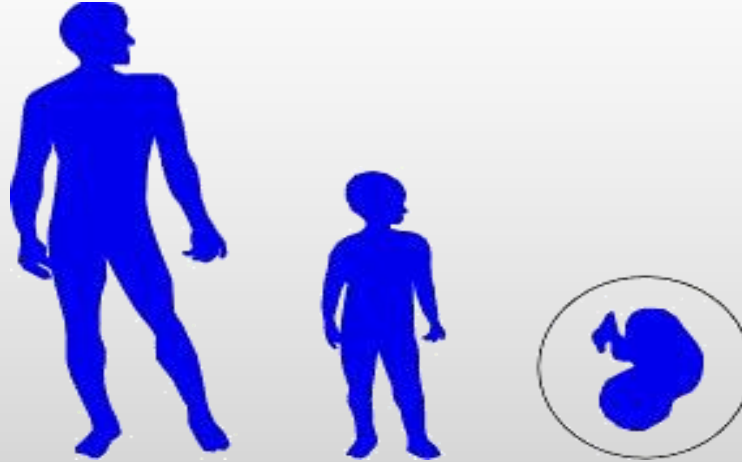
- A dose of radiation received in a *short* period—from seconds to days



Prenatal Effects

9-4

The embryo/fetus is especially sensitive to radiation.



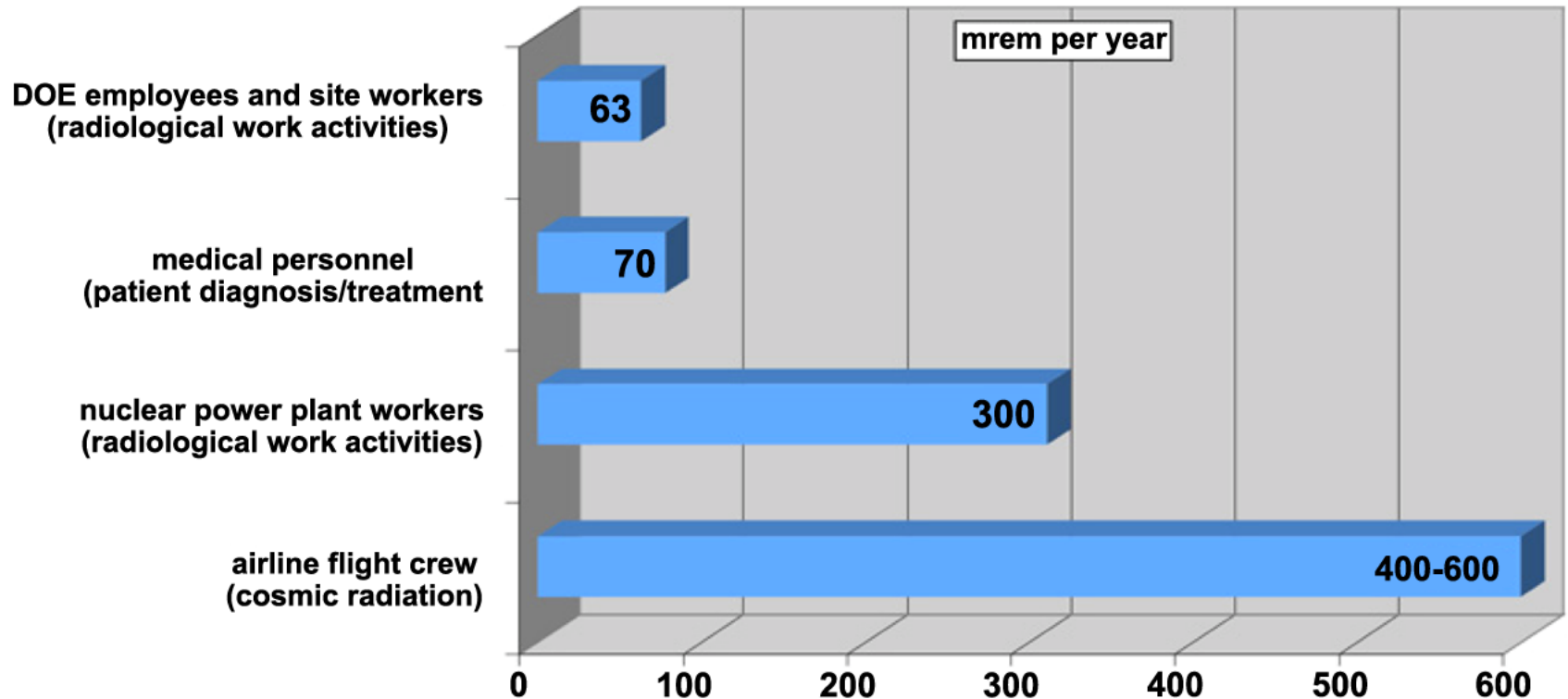
High doses of radiation can result in miscarriage, low birth weight, mental retardation, birth defects, and increased risk of cancer and other diseases.

Reporting a Pregnancy

9-5

- You are encouraged to report a pregnancy in writing to your supervisor and/or Occupational Medicine (OM).
- The RHAP will evaluate your work situation.
- You are protected from discrimination by Title VII of the Civil Rights Act of 1964, as amended, while you are reassigned.

Comparing Occupational Exposures 9-5



Radiation Dose Limits

9-6

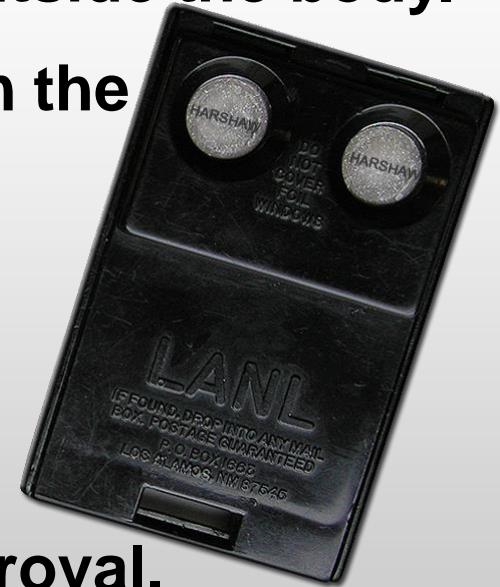
DOE Annual Radiation Dose Limits		
	rem per year	mrem per year
Radiological Workers	5	5000
Embryo/Fetus	0.5 (term of pregnancy)	500 (term of pregnancy)
Visitors and the Public	0.1	100

Monitoring Radiation Dose

9-6

The TLD is the primary device used to measure external radiation dose from sources outside the body.

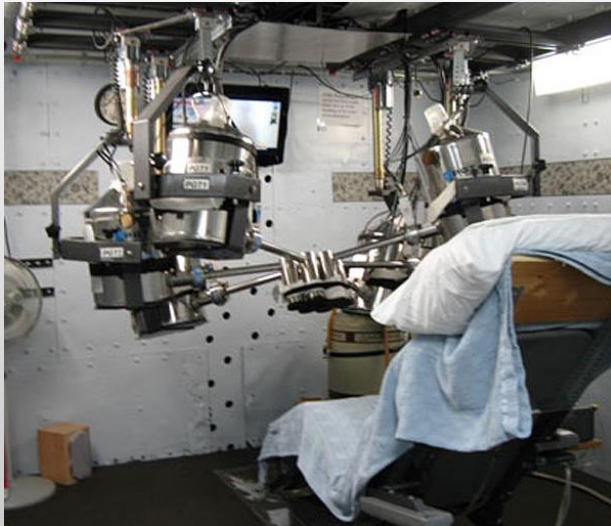
- Wear at all times in rad areas between the neck and the waist.
- Treat it nicely.
- Do not expose it to non-work-related sources of radiation.
- Do not travel with it without prior approval.
- Report loss, undo exposures, troubles to your RCT.



Monitoring Radiation Dose

9-6

Internal radiation dose is measured by whole-body counting or other bioassay methods.



As

Low

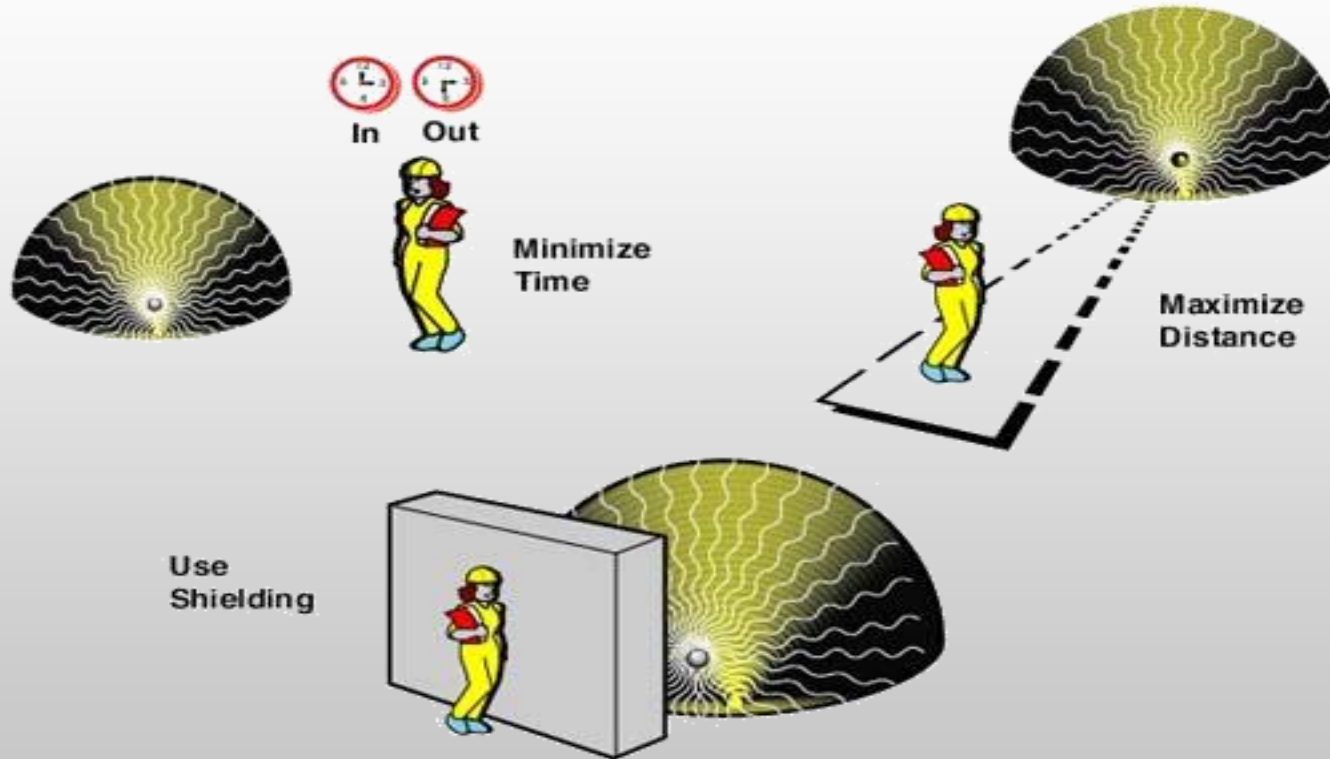
As

Reasonably

Achievable

Reducing External Dose

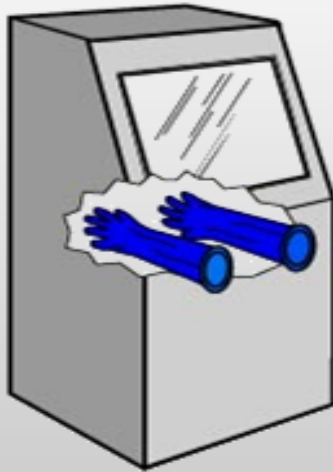
9-6



Reducing Internal Dose

9-7

Control methods that keep radioactive material from entering the body



Engineering



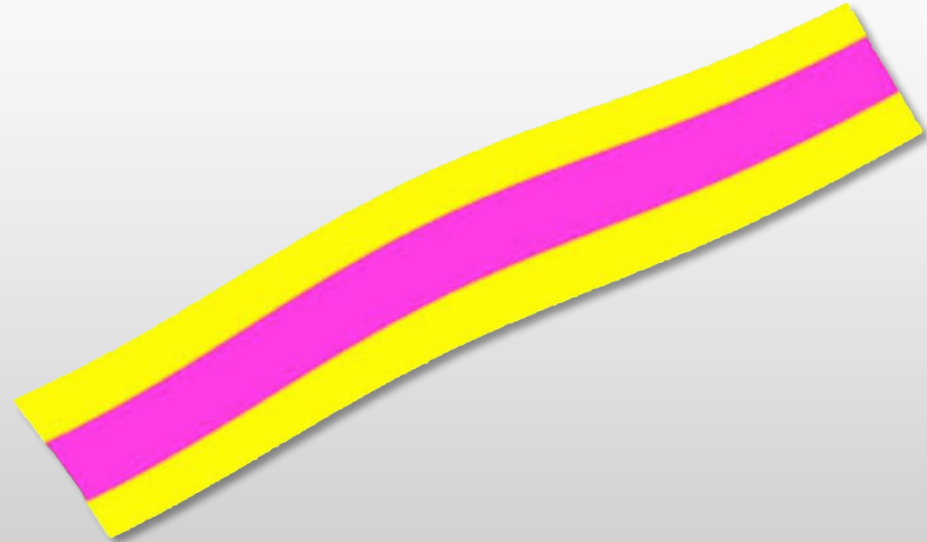
Administrative



PPE

Recognizing Radiological Hazards

9-7



Radiological Areas

9-7

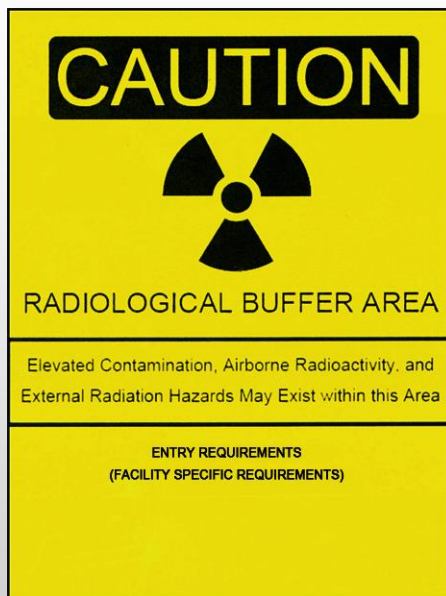
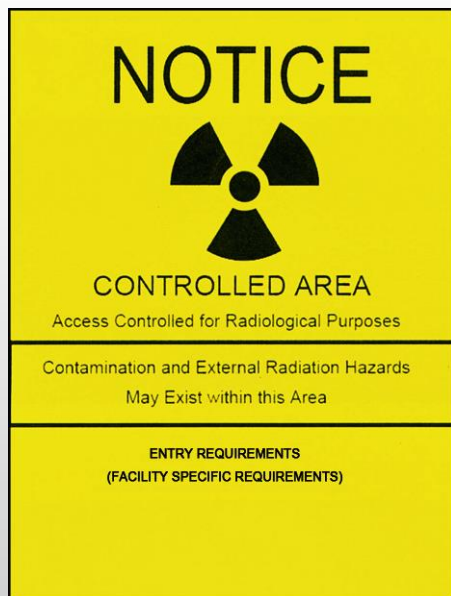
Work areas are categorized as follows:

- **Controlled Areas-** have relatively low radiological risk, controlled access, and surround radiological buffer areas or radiological areas;
- **Radiological Buffer Areas**
- **Radiation, Contamination, and Airborne Radioactivity Areas**

Note: Some areas are posted as Legacy Controlled Areas. Obtain approval from RP-PROG before working on or breaching systems, surfaces, or programmatic equipment.

Radiological Postings

9-8



Radiological Posting

9-8



General Employee Training: General Employee
Radiological Training

GET_15503_VG3,R7.5

Radiological Posting

9-8



Training Requirements

9-8

This required training . . .	allows unescorted entry into a . . .
General Employee Radiological Training	Controlled Area
Radiological Worker I Training*	Controlled Area Radiological Buffer Area Radiation Area High Radiation Area
Radiological Worker II Training	Controlled Area Radiological Buffer Area Radiation Area High Radiation Area Very High Radiation Area Contamination Area High Contamination Area Soil Contamination Area Airborne Radioactivity Area
*LANL offers GERT and Radiological Worker II training programs	

Managers' Responsibilities

9-8

- **Ensure that radiation doses are kept ALARA**
- **Determine which workers need dosimeters**
- **Identify radiological workers**
- **Ensure that workers are trained**
- **Establish radiological control programs**

Your Responsibilities

9-9

Keep your personal dose ALARA

- Obey radiological signs and postings
- Follow rules and procedures
- Enter areas controlled for radiological purposes only if properly trained or escorted and only when necessary for your work
- Use ALARA techniques to reduce dose
- Report unusual radiological situations to your supervisor or RCT
- Be aware of emergency procedures
- Refresh GERT every 24 months or upgrade to Radworker training

Note: For more info, please see P121, *Radiation Protection*

Nuclear Criticality Safety

9-9

- **Fission** is the process by which certain materials release large amounts of radiation
- Fissile materials include some kinds of plutonium and uranium
- When fission occurs uncontrollably, a criticality accident results
- The Nuclear Criticality Safety Division (NCS) provides nuclear criticality safety expertise
- If you work near fissile materials, you will receive additional training.

Emergency Procedure Information 9-9

Emergency procedures and alarms vary for different facilities and areas. You should know

- Emergency procedures specific to your work area
- Warning sirens or alarms specific to your work area
- How to contact your RCT



Self-Assessment Time

General Employee Radiological Training

Fire Protection

You Will Learn

10-1

- That fire prevention is encouraged in your daily work activities
- That your first responsibility during a fire is to protect yourself
- That you should know the sound of the fire alarm in your building
- The steps to follow if a fire occurs
- Training requirements for using a portable fire extinguisher
- That you should be familiar with your building emergency plan
- Building evacuation steps
- What you should do if you are trapped in a burning building

Fire Classification

10-1

Fires are classified by the type of material burning

- **Class A: ordinary combustibles such as trash, wood, paper**
- **Class B: flammable liquids and gases**
- **Class C: energized electrical equipment**
- **Class D: combustible metals**
- **Class K: cooking oils (animal and vegetable oils and fats)**

Prevent fires in your daily work activities



Your First Responsibility

10-3



Be Prepared

10-3

Before a fire occurs, you should know the elements of your building emergency plan

- **the sound of the fire alarm**
- **emergency procedures**
- **evacuation routes and exits**
- **locations of alarm pull-boxes**
- **locations of assembly areas**



Steps to Follow in a Fire

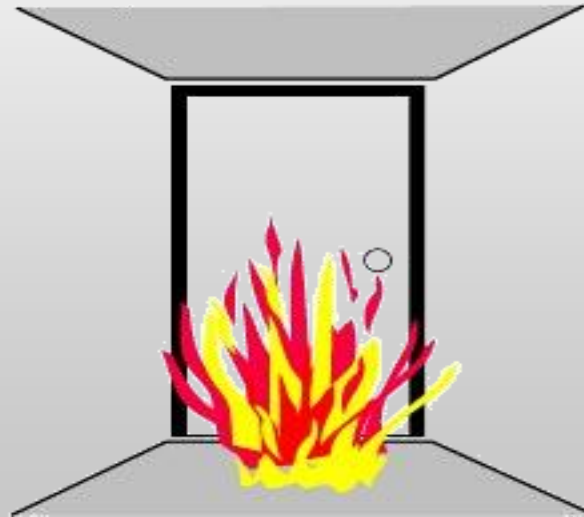
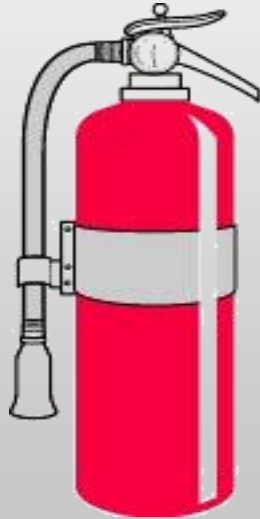
10-3

- 1. Pull the manual fire alarm**
 - 2. Call 911 (provide TA and building numbers)**
 - 3. Evacuate the building**
 - 4. Report to your assembly area**
- (Pull the manual fire alarm and call 911 before using a portable fire extinguisher)**

Using a Portable Fire Extinguisher

10-4

The Laboratory encourages evacuation. If you are trained to use an extinguisher, pull the fire alarm and call 911. Then if it is safe to do so, you may choose to use the fire extinguisher to put out a small fire.



Is it safe to use the extinguisher?

10-4

Have you called 911 and pulled the local alarm?

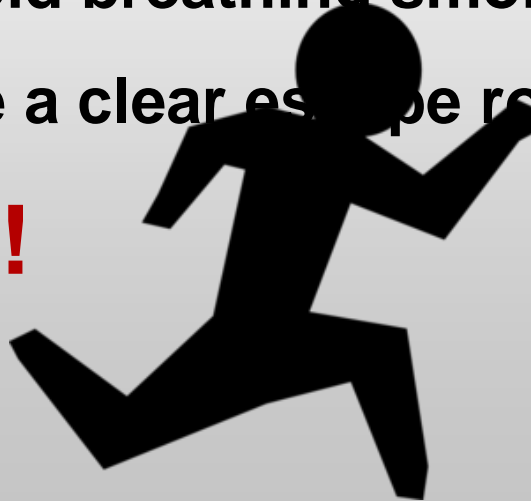
Is the fire small and contained?

Do you have the correct type of extinguisher?

Can you avoid breathing smoke?

Do you have a clear escape route to your back?

If no, go!



Using a Portable Fire Extinguisher 10-4

Hands-on instruction is part of fire extinguisher training.

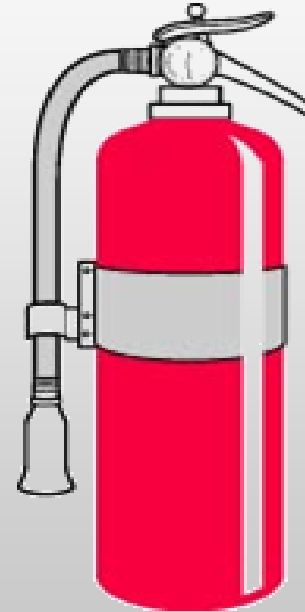


Using a Portable Fire Extinguisher

10-4

To operate a fire extinguisher, use the PASS method:

1. *Pull the pin*
2. *Aim low*
3. *Squeeze the handle*
4. *Sweep from side to side*



Evacuating a Burning Building

10-4

- **Never open a door before feeling it**
- **Close doors, but do not lock them if you are the last one out**
- **Go to the nearest exit**
- **Do not use elevators**
- **Stay low to avoid smoke and toxic gases**
- **Cover your mouth and nose with a cloth, if possible**
- **Report to your assembly area**

Trapped in a Burning Building

10-4

- Close all doors and seal cracks and vents
- Call 911 if possible; report your exact location
- Open a window **only** if you can escape through it or if you have difficulty breathing

Self-Assessment Time

Fire Protection



Security



You Will Learn

14-1

- about the organizations responsible for security
- about the elements and proper use of your security badge
- your security responsibilities
- that the Laboratory is a drug-free workplace
- why and how nuclear materials are safeguarded
- the difference between classified and CUI information
- the levels and categories of classified information
- what you must do before using a Laboratory computer
- that hostile intelligence threats, foreign contacts, and travel to sensitive countries must be reported



Security and Safeguards Organization

14-1

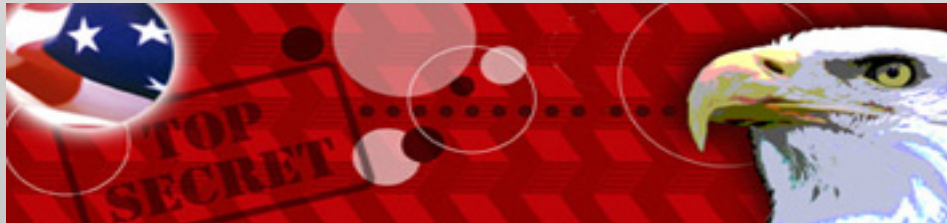


Security Operations



SOC Los Alamos

**Physical
Security**



Safeguards



Emergency Operations



Security Help Line

14-1

For answers to security-related questions, contact the Security Help Line at 5-2002 or security@lanl.gov



and/or the deployed security officer (DSO) for your organization.



Protective Force

14-1



General Employee Training: Security

GET_15503_VG5,R7.5



Security Organization

14-2

As a worker, you are required to participate fully in LANL security programs.

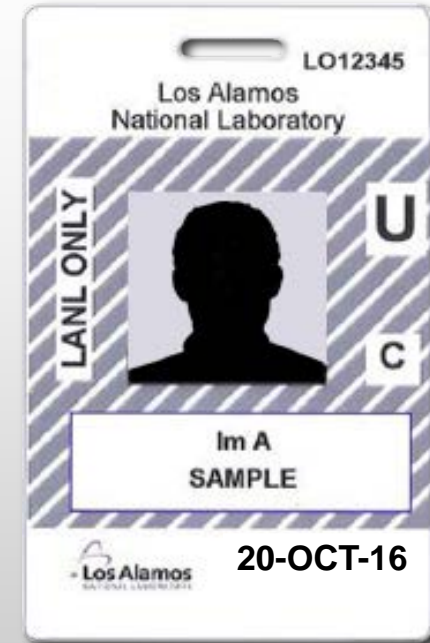




Your Security Badge

14-2

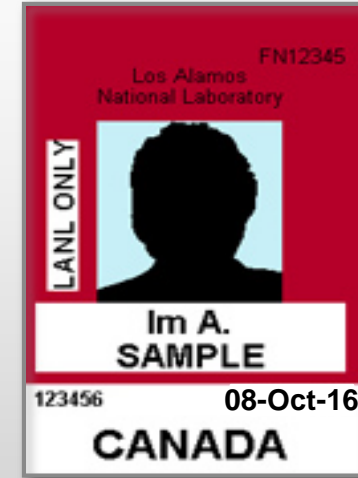
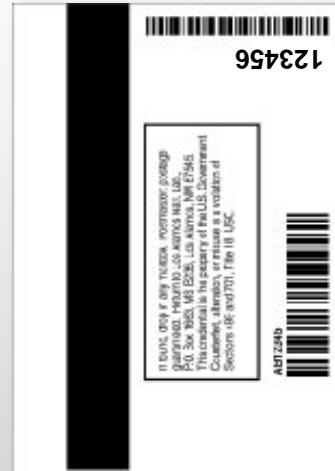
- Using your badge
- If you lose your badge
- If you forget your badge
- Clearance information
- Elements of your badge
- Entering and leaving security areas





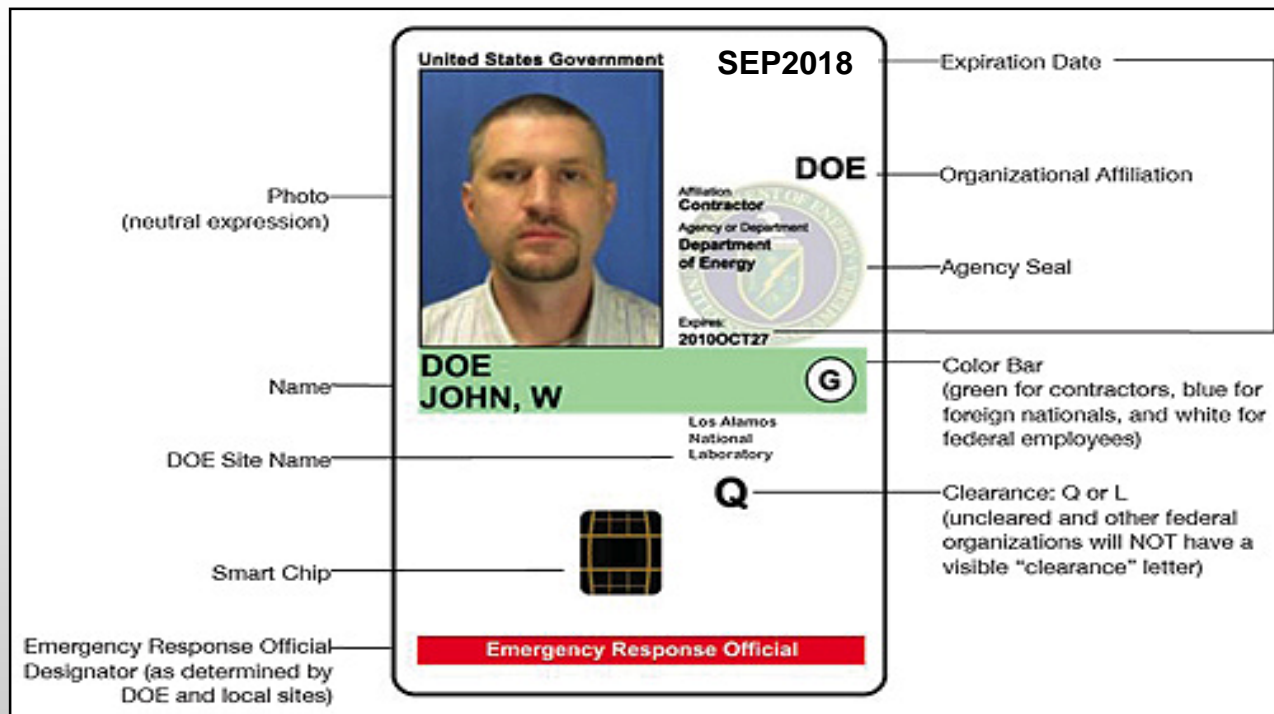
Security Badges

14-2



Federal Security Badges

14-2



Protect your badge, your privacy, and national security by keeping your badge in the supplied protective sleeve.



Access: Property Protection Area

14-3



- Access with a badge reader only
- No piggybacking allowed





Access: Security Area

14-3



General Employee Training: Security

GET_15503_VG5,R7.5



Access: Security Area

14-3



&



No piggybacking allowed!



Vehicle Access Portals

14-3

- Approach and leave the portal area safely.
- If the booth is staffed, you must **STOP** at the station. **DO NOT** drive through the post without stopping and being authorized to proceed.
- At the VAPs on Pajarito Road, all individuals must show their valid security badge.

Note: PF members have the duty and obligation to verify the identity of persons entering.





Interacting with Protective Force

14-4

When a protective force officer directs a Laboratory worker to do something (especially in emergency situations), the LANL employee must follow directions.





Searches

14-4

While on Laboratory property, you are subject to

- personal and vehicle searches
- work area searches using bomb-detecting dogs





Prohibited Articles on Lab Property ¹⁴⁻⁴

- **Dangerous weapons and explosives**
- **Other articles likely to cause personal injury or property damage**
- **Alcohol and illegal drugs**
- **Any other articles prohibited by law**



Controlled Articles in Security Areas

14-4

- **Recording equipment (audio, video, optical, or data)**
- **Cameras (film, digital, video, or still)**
- **Non-government-owned portable electronic devices (including computers, iPods, and USB drives)**
- **Cellular telephones, two-way pagers, and radio-transmitting equipment**
- **Wireless devices**



Electronic Devices

14-5

These devices pose a security risk if intentionally or unintentionally used as surveillance equipment:

- cellular telephones
- radio-frequency transmitters
- two-way pagers
- wireless devices
- personal digital assistants (PDAs)
- still and video cameras
- other electronic devices



Memo Pen



Cellular Telephones

14-4

- Cell phones pose significant security threats
- Remove batteries from Laboratory-issued cell phones, two-way pagers, etc., before entering secure areas.
- Secure areas have small lockers set up outside for securely storing personal electronic devices.
- Government-issued Blackberry and iPhone smartphones are allowed for conditional use in limited areas.

Note: Private cell phones, two-way pagers, and other electronic devices are prohibited in security areas.



Technical Surveillance Countermeasures

14-5

TSCM is an electronic countermeasures program used to

- **detect and deter espionage**
- **protect against inadvertent disclosure of classified or sensitive information**
- **protect your privacy at work**



TSCM (cont)

14-6

- If you take LANL electronic equipment to foreign countries, consult with the TSCM Team before going and upon returning.
- LANL electronics taken to sensitive countries must be examined by the TSCM Team upon returning.
- If you suspect that you are the target of a surveillance device, contact (preferably in person) the TSCM Team from a location away from the suspected targeted area.
- When requesting assistance, do not indicate the nature of the situation; simply ask to speak to a member of the TSCM Team.



Your Security Responsibilities

14-6

Escorting uncleared visitors into a security area is a formal process.

- Take appropriate training
- Use *Escort Required* badges
- Brief visitors on prohibited and controlled items
- Log visitors in and out of secure areas
- Protect classified information
- Keep uncleared visitors in sight at all times



Reporting Requirements

14-6

Workers who have a clearance or are in the process of getting one must report the following.

- **Marriage or cohabitation change**
- **Change of name**
- **Extended leave of absence**
- **Personal conditions and events**
- **Theft or misuse**
- **Security events**



Reporting Theft or Misuse

14-7

You must report theft or misuse of government property.

- **Notify your supervisor,**
- **Notify your Division Security Officer,**
- **Notify Internal Inquiries at 5-6159, or**
- **Call the ECP 24-hour Helpline at 5-9999 to report fraud, waste, or abuse**



Reporting Security Events

14-7

You are required to immediately report any known or potential security incidents to the Security Incident Team and your RLM.

- **Reports must be made only in person**
- **Call the SIT at 5-3505 to make arrangements to meet**
- **Ensure that potentially classified information is discussed only by secure means**



Incidents of Security Concern

14-7

Security incidents can include

- processing of classified information on an unclassified computer
- incorrect transmission of classified matter
- unauthorized disclosure of classified matter
- unsecured/unattended classified matter and/or container
- incorrect reproduction of classified matter
- classified matter that is lost, stolen, or unaccounted for
- attempts to remove, divert, or obtain unauthorized access to classified matter



Incidents of Security Concern (cont)

14-7

- unauthorized access to classified or unclassified information systems/networks
- any breach or attempted breach of a security area, access controls, or security system
- introducing prohibited/controlled articles into a security area
- incorrect use of a security badge
- sabotage of LANL facilities
- any suspicious or criminal activity
- known or suspected cases of technical surveillance



Maintaining a Drug-Free Workplace ¹⁴⁻⁸

- LANL workers are subject to random drug testing.
- You may not work under the influence of alcohol or drugs.
- You may not possess, sell, transfer, or use illegal drugs on Laboratory-operated property.
- You may use safe, legally prescribed drugs, as long as they do not affect your work.
- You may not bring or use alcohol on Laboratory-operated property.
- You may be disciplined, up to and including termination.

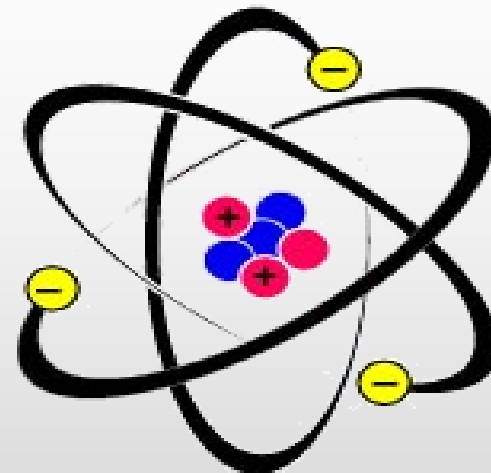
Note: Substance-abuse counseling is available through Occupational Medicine.

General Employee Training: Security



Material Control and Accountability ¹⁴⁻⁸

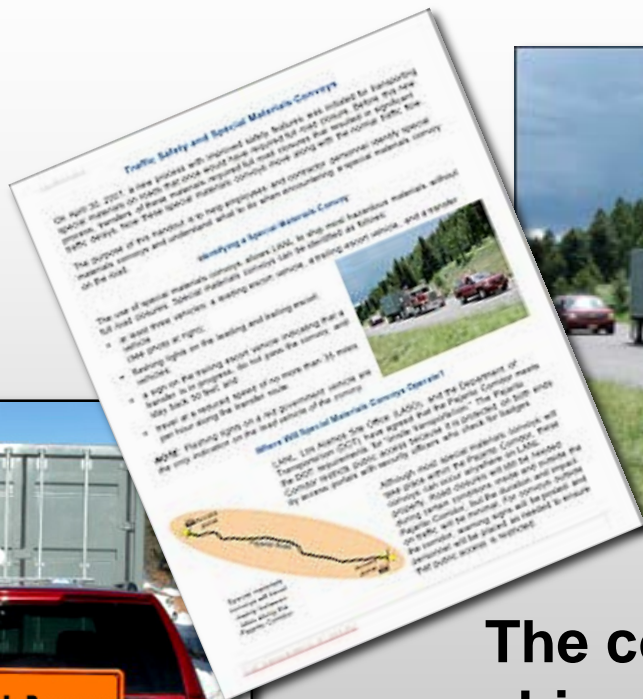
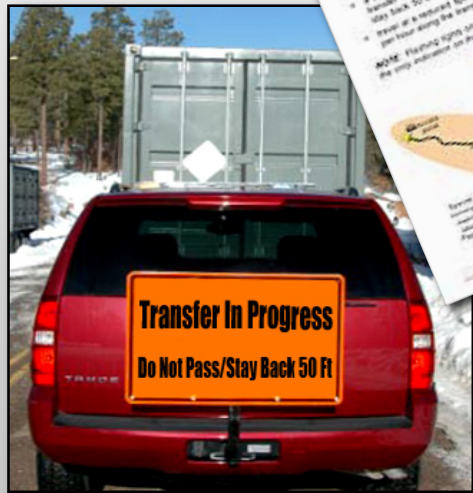
- Nuclear MC&A programs control nuclear materials and weapons
- Requirements include proper documentation, training, and assessments on the use and staging of nuclear materials
- See PD205 for more information





Special Materials Convoys

Handout



The convoys allow the Lab to ship most hazardous materials within LANL boundaries without full road closures.



Classification

14-8

- **Classification is the process of identifying information that should be protected for national security**
- **When classified information is improperly disclosed, some degree of damage to national security occurs.**





Classification: Levels and Categories 14-9

<i>Level</i>	<i>Category</i>		
	<i>Restricted Data</i>	<i>Formerly Restricted Data</i>	<i>National Security Information</i>
Top Secret	Q	Q	Q
Secret	Q	Q or L	Q or L
Confidential	Q or L	Q or L	Q or L



Safe Evacuation

14-9

If your building is evacuated and life or safety is in jeopardy, safe evacuation is the first priority.

Follow these steps:

- **Leave classified materials and equipment as is and evacuate immediately**
- **Report any materials or safes left unattended to the SIT and your SRLM**
- **When the area is reoccupied, examine and account for materials and repositories immediately**



Controlled Unclassified Information

14-9

- **Unclassified Controlled Nuclear Information (UCNI)**
- **Export Controlled Information (ECI)**
- **Official Use Only (OUO)**
 - Personal/privacy information
 - Company proprietary
- **Personally Identifiable Information (PII)**
 - Social security numbers, date and place of birth, medical and employment records, etc.
 - Must be encrypted when sent or carried offsite
 - Requires immediate notification of possible loss
 - CUI requires special handling





Your Responsibilities

14-9

- **Follow instructions on the proper handling of CUI information**
- **If you find CUI in an inappropriate area, protect it and notify your RLM immediately**



Information Security

14-10

- **As a Laboratory computer user, you are required to participate actively in information security by following all LANL and DOE policies and procedures**
- **Many activities are strictly prohibited, including viewing pornography, gambling, running a business, and excessive web surfing.**
- **You must complete required computer security training**
- **You must register as a computer user**
- **Contact your OCSR—your focal point for cyber security—to help you get started**



Special Computer Considerations

14-10

- Never share your password or PIN
- Never click on unknown attachments or URLs in e-mail
- Bluetooth capabilities are prohibited
- Follow proper protocol for wireless networks
- The use of non-government-owned electronic devices is restricted (laptops, iPods, USB drives, etc.)
 - Do not connect **outside devices** to any LANL network
 - Do not take in to a security area

Immediately report cyber security incidents to your OCSR, line manager, the Cyber Security Team, and/or the Security Inquiry Team



Office of Counterintelligence

14-10

The mission of the OCI is to protect the Laboratory and its employees from efforts by foreign intelligence services and terrorist groups to acquire sensitive and classified information. Programs include

- Counterintelligence
- Foreign Visits and Assignments
- Immigration Services
- Operations Security (OPSEC)





Hostile Intelligence Threat

14-11

- **Two Threats**
 - information obtained that could be used to damage national security
 - illegally obtained R&D technology that could result in a significant loss
- **Two Methods**
 - trained information collectors trying to gather information
 - foreign intelligence agents trying to recruit workers

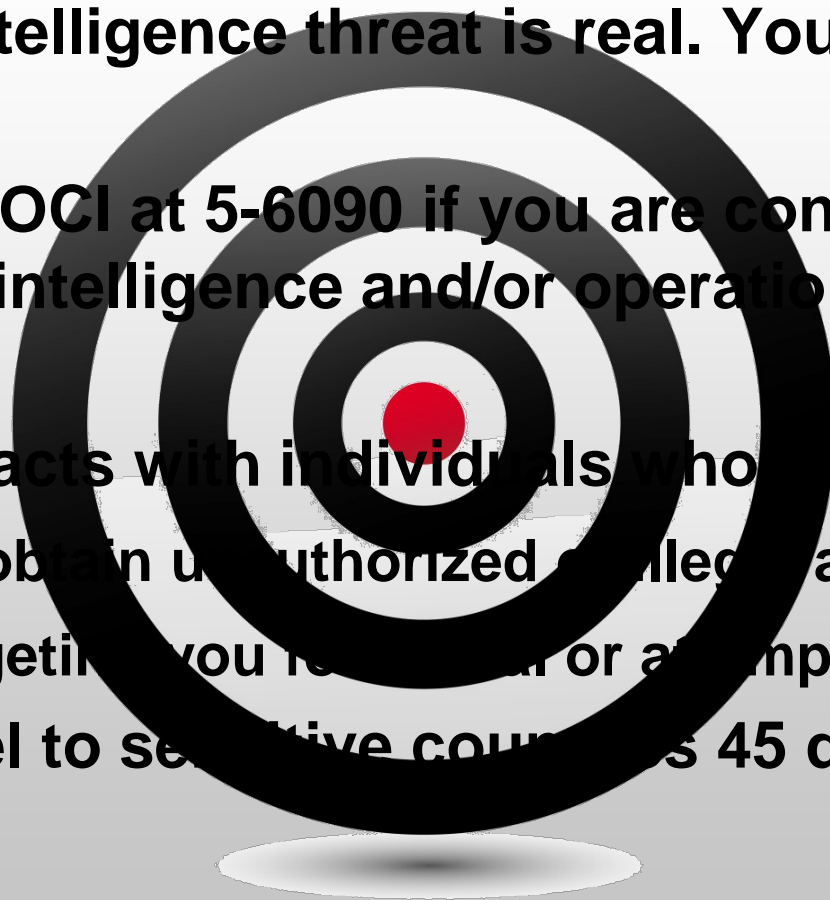


Reporting Responsibilities

14-11

The hostile intelligence threat is real. You could be a target.

- **Contact the OCI at 5-6090 if you are concerned about any counterintelligence and/or operations security issues.**
- **Report contacts with individuals who**
 - **attempt to obtain unauthorized computer access or info**
 - **may be targeting you for espionage or attempted exploitation**
- **Report travel to sensitive countries 45 days before you leave**





Self-Assessment Time

Security



Emergency Operations



You Will Learn

11-1

- 1. the Lab's Emergency Operations program**
- 2. elements of a building emergency plan**
- 3. how to prepare and respond to emergencies**
- 4. your responsibility for reporting emergencies**
- 5. procedures for reporting emergencies**
- 6. your protective actions**



Emergency Operations

11-1

Emergency Operations

Emergency Management

Hazardous Materials

Emergency Operations Center

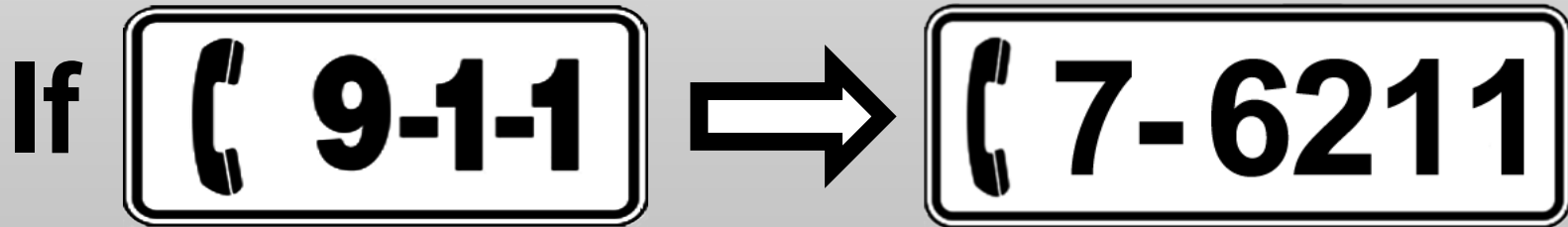


Note: The Laboratory also maintains a larger, multiagency Emergency Response Organization made up of Lab managers and subject matter experts, Los Alamos County, and state and federal agencies.

Emergency Operations Center

11-1

The EOC is staffed continuously day and night. During any event when you need to call 911, you should also call the EOC at 505-667-6211. Enter this number as a contact in your cell phone.

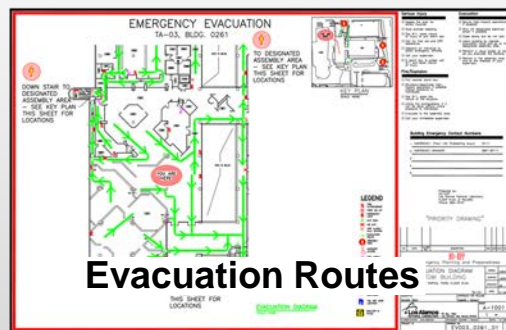


Continuity of Operations (COOP)

11-1

The COOP program ensures the performance of mission essential functions in emergencies.

- **Stay in communication with your group during an emergency.**
- **Essential personnel will receive more information and training on the job.**



FIRE
911



Emergency Equipment



Fire Alarms



Assembly Areas



When You Report to Work

11-2

In your new work area,

- **find and review the posted evacuation maps**
- **review the LANL site evacuation map routes**
- **find and review your building emergency plan**
- **know your building designation**
- **talk to your supervisor about what to do in an emergency**



Planning Preparedness

11-2

Each worker needs to know protective actions to take in the event of an emergency.

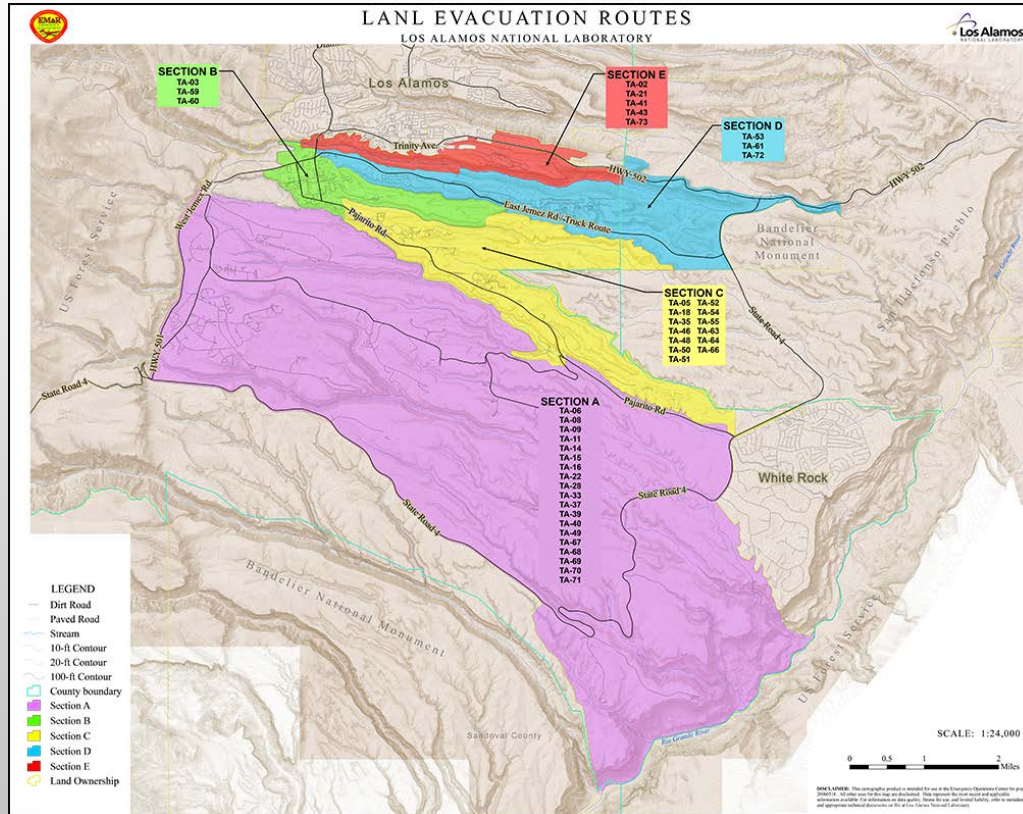
- **Use common sense**
- **Know emergency procedures and protective actions**
- **Listen for evacuation or shelter instructions**
- **Follow given instructions**
- **Know site-wide evacuation routes**
- **Keep up with the news**



Site-Wide Evacuation

11-2

During an evacuation, all available major roadways will be used as evenly as possible.



General Employee Training: Emergency Operations

GET_15503_VG4,R7.5



Laboratory Closure Information

11-3

For information on Laboratory emergencies, delays, and closures, call the Laboratory Update Information Hotline:

- **667-6622**
- **1-877-723-4101 (toll free)**

Information should be on Update ~5:00 a.m.

Go to <http://www.lanl.gov/>

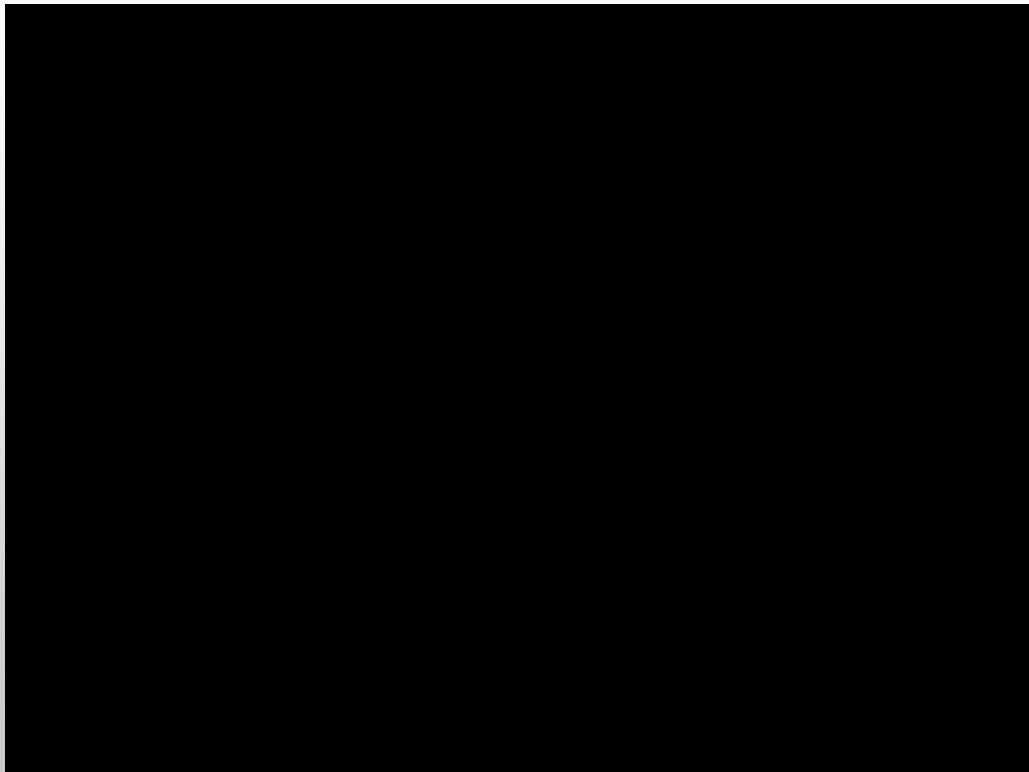
Building occupant responsibilities:

- If safe, place operations in a safe configuration
- Take your coat, handbag, car keys, etc.
- Do not carry food, drinks, etc.
- Perform a sweep along your exit route
- Escort visitors and nonresident contractors out
- Do not use elevators

(more)

Building occupant responsibilities (cont)

- If safe, secure the area without locking doors
- Follow evacuation route
- Report to the designated assembly area
- Be aware of and give the right-of-way to emergency vehicles and personnel
- Remain quiet, orderly, and do not smoke
- Do not reenter until instructed by the incident commander



General Employee Training:

GET_15503_VG4,R7.5

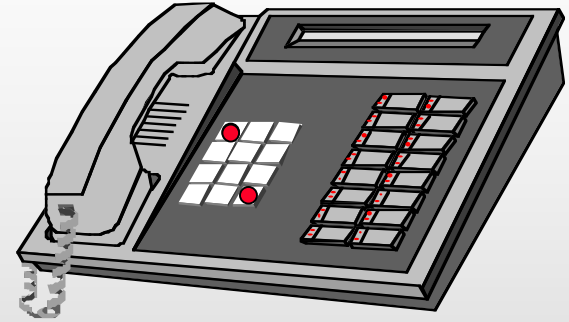


Reporting an Emergency

11-4

You must immediately report any emergency.

- 1. Call 911**
- 2. Call the EOC at 667-6211**
- 3. Notify your line manager**



For incidents or concerns that pose a potential threat of harm, call the EOC at 667-6211 and notify your line manager.

Note: If you call 911 from a cell phone, identify your location as Los Alamos and give the TA and building number.



Hazardous Events

11-5

- **Earthquake**
- **Snow and Ice**
- **Flooding**
- **Lightning**
- **Hazardous substance/chemical spill**
- **Bomb threat**
- **Unclaimed, unattended package**

During an earthquake

- Stay calm and help keep others calm
- If indoors, stay there. Get to a safe corner or doorway.
- If outdoors, get to an open area.

After an earthquake

- Do not smoke, light matches, or use electrical devices
- Avoid downed wires and energized objects
- Do not use elevators
- Use the telephone only in case of emergency



Snow and Ice

11-5

- **Wear shoes that grip**
- **Walk on cleared paths when possible**
- **Stay clear of sagging or downed power lines**
- **Avoid snow-laden trees**
- **Use extreme caution when driving**





Flooding

11-6

If outdoors:

- **Climb to higher ground**
- **Avoid walking or driving through flood water**
- **If your car stalls, abandon it at once and climb to higher ground**

If indoors:

- **Be ready to evacuate as directed**
- **Time permitting, move vital material and equipment to higher ground**





Spills

11-6

- Do not attempt to control spills that are outside your approved work activity.
- Isolate the area, leave, and warn others to stay away.
- Move uphill and upwind.
- Immediately report the spill to the EOC at 7-6211. Give specific information.
- If exposed, use the emergency eyewash/shower. Follow SDS information.
- If a radioactive substance has spilled, call the RCT.
- Notify your line manager and the FOD.

Note: Make sure you know the spill response for any substance you are using.



Bomb Threats

11-6

If you receive a telephoned bomb threat:

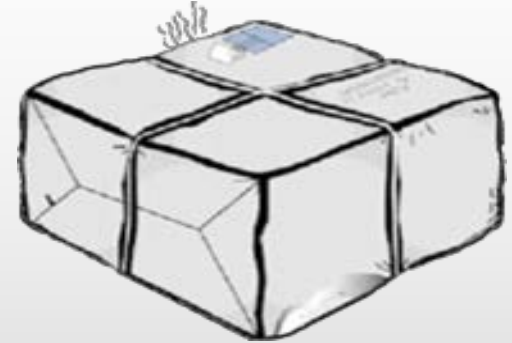
- **Use the Telephone Bomb Threat Checklist.**
- **Write down the phone number from the caller ID screen.**
- **If someone has not already done so, call 911 and the EOC at 7-6211 when the caller hangs up.**
- **Notify your supervisor.**
- **Do not pull the fire alarm, open doors or windows, touch light switches, or use two-way radios or cell phones.**
- **Evacuate as instructed.**
- **Scan the assembly area for suspicious items.**



Unclaimed, Unattended Package

11-7

- Immediately call 911 and the EOC at 7-6211 using a landline phone in a safe location.
- Do not pull the fire alarm.
- Do not move, bump, or touch the object.
- Secure the area and prevent entry.
- Evacuate to a perimeter of at least 300 feet, including above and below.
- Do not use two-way radios or cell phones.
- Notify senior management.
- Thoroughly wash, without abrading the skin, if exposed to the suspicious package.





Tag Your Bags

11-7

- An untagged bag (backpack, briefcase, gym bag, laptop case, etc.) in a public place is assumed to be a threat.
- An untagged bag in a public place is a potential hazard.
- To avoid this, attach a "Tag Your Bag" card to the bag.





Bonus Information

Some Regional Hazards



Wildfires



General Employee Training: Emergency Operations

GET_15503_VG4,R7.5



Flash Floods



General Employee Training: Emergency Operations

GET_15503_VG4,R7.5



Rolling Rocks



On the Front Hill (Hwy. 502)



Wildlife



General Employee Training: Emergency Operations

GET_15503_VG4,R7.5



Wildlife



General Employee Training: Emergency Operations

GET_15503_VG4,R7.5



Wildlife



General Employee Training: Emergency Operations

GET_15503_VG4,R7.5



Wildlife



General Employee Training: Emergency Operations

GET_15503_VG4,R7.5



Wildlife



General Employee Training: Emergency Operations

GET_15503_VG4,R7.5

Traffic Safety and Special Materials Convoys

- **Identifying a special materials convoy**
- **Where will special materials convoys operate?**
- **Safety expectations for special materials convoys**
- **Noncompliance with safety expectations**



Self-Assessment Time

Emergency Operations



Occupational Health (OH)



You Will Learn

12-1

- 1. about the medical evaluations required at the Laboratory**
- 2. the procedures for reporting work-related injuries and illnesses**
- 3. the special health services available through OH**
- 4. the health-promotion services provided by OH**
- 5. how your medical records are handled**



Occupational Health Building

12-1



TA-3, Building 1411

General Employee Training: Occupational Health

GET_15503_VG4,R7.5



Occupational Health Programs

12-1

- Medical evaluations
- Clinical care
- Reproductive health services
- Travel clinic services
- Counseling
- Health promotion
- Leave assistance
- Medical surveillance and certification





Availability of Services

12-1

- **All medical services offered are available to Laboratory employees.**
- **Services to contract workers vary with contracts**
 - **ask your employer about available services.**



Medical Evaluations

12-1



- **New-hire evaluations**
- **Periodic surveillance and certification evaluations**
- **Termination evaluations**
- **Return-to-work evaluations**
- **Medical evaluation for work (fitness-for-duty)**



Injuries and Illnesses

12-2

All work-related injuries and illnesses must be reported to your supervisor.

- If there is a medical emergency, call 911 immediately. Then notify your manager and EO at 667-6211.
- If you are not sure if medical attention is needed or where to go for treatment, call the EO at 667-0660.
- During work hours, your manager should go with you.
- After hours or offsite, call EO (24 hours/day) at 667-0660, extension 1, for direction.
- Before returning to work, report to OH.

General Employee Training: Occupational Health



Injuries and Illnesses (cont)

12-3

- Reporting must be within 15 calendar days to be considered for workers' compensation.
- OH provides initial care and follow-up treatment for LANS, MSS, the protective force, LAFD, and NA-LA workers.
- For other contract workers, OH provides initial care for injuries or illnesses that occur on LANL property.
- A private health care provider should treat non-work-related injuries and illnesses. Imposed medical restrictions must be evaluated by OH.

General Employee Training: Occupational Health



Ergonomics

12-3

Injuries can develop slowly following repetitive activities, such as typing, lifting, and bending and twisting the back and upper extremities.

Help is available:

ergo.lanl.gov

ergo evaluations

demo room

glovebox support

equipment programs

solutions database





Reproductive Health Assistance Program

12-3

The RHAP helps to protect against reproductive health hazards in the workplace.

Representatives from OH, RP, and OHS

- conduct workplace evaluations on request**
- inform workers of workplace reproductive hazards**
- inform workers of options to minimize exposure**

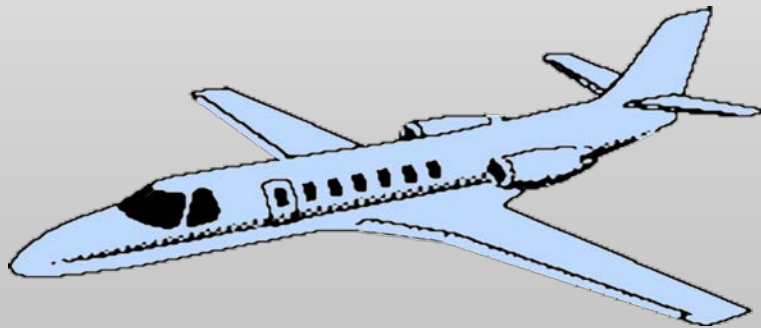
If you are pregnant, you are encouraged to declare your pregnancy in writing to your supervisor and/or OH.



Travel Clinic Services

12-4

- Immunizations for official Laboratory travel
- Centers for Disease Control travel advisories
- Information on jetlag
- Information on finding physicians





Employee Assistance Program

12-4

Any LANL badge holder may make an appointment to discuss any issue of concern by calling 7-7339.

Counseling services are offered in a variety of areas, including addiction assistance, stress management, veteran's issues, and crisis response.





Services for Persons with Disabilities

12-4

- **Onsite assistance**
- **Reasonable accommodations**





Preventive Medicine Services

12-4

- **Blood pressure monitoring**
- **Screening services**
- **Training on health-related topics**
- **Health promotion and fitness incentive programs**





Health and Fitness Programs

12-4



- **Weight management**
- **Stress management**
- **Smoking cessation**
- **Cholesterol reduction**
- **Injury prevention and other exercise classes**





Wellness Center

12-4



General Employee Training: Occupational Health

GET_15503_VG4,R7.5



Your Medical Records

12-5

- You may see your records.
- You may have your records sent to anyone you choose.
- Your personal health information is protected by the HIPAA Medical Privacy Standards and by other applicable laws and regulations.





Self-Assessment Time

Occupational Health



Environment



You Will Learn

13-1

- **environmental laws, regulations, and internal requirements designed to protect human health and the environment**
- **the organizational resources available at the Laboratory to assist with environmental compliance performance**
- **the institutional tools that may be used to ensure compliance with the environmental regulations; and**
- **your responsibilities for complying with Laboratory environmental policies.**



Governing Policy on the Environment

13-1

“We are committed to act as stewards of our environment to achieve our mission in accordance with all applicable environmental requirements. We set continual improvement objectives and targets, measure and document our progress, and share our results with our workforce, sponsors, and public. We reduce our environmental risk through legacy cleanup, pollution prevention, and long-term sustainability programs.”



Agencies and Laws

13-1

Federal Laws and Regulations

Numerous laws govern environmental protection, including

CAA	Clean Air Act
CWA	Clean Water Act
ESA	Endangered Species Act
NEPA	National Environmental Policy Act
RCRA	Resource Conservation and Recovery Act
NHPA	National Historic Preservation Act

Environmental Protection Agency

The Environmental Protection Agency (EPA) is the primary agency responsible for developing federal environmental regulations.



Agencies and Laws

13-2

State Agency

The New Mexico Environment Department (NMED) has been granted authority by the EPA to enforce many environmental laws.

State Law

NMHWHA New Mexico Hazardous Waste Act

The Laboratory must comply with all applicable federal and state environmental laws and regulations.



Laboratory Resources

13-2

- The Laboratory is committed to protecting workers, the public, and the environment.
- The Laboratory's environmental policies and procedures combine safe work practices with compliance requirements called out in federal and state laws and regulations.
- Laboratory environmental policies (PD 400 and P 400 series) are available in the Policy Center.
- ES&H requirements for subcontractors are found in P101-12, ES&H Requirements for Subcontractors.



Laboratory Resources

13-2

- **Environmental Protection Division**
 - **Environmental Compliance Programs (ENV-CP)**
 - **Air Quality Permitting/Compliance Team**
 - **Water Quality Permitting/Compliance Team**
 - **RCRA Permitting/Compliance Team**
 - **Environmental Stewardship Services (ENV-ES)**
 - **Biological Resources Program**
 - **Cultural Resources Program**
 - **Environmental Management System (EMS)**
 - **Environmental Radiation Protection**
 - **Integrated Project Review (IPR) Program**
 - **National Environmental Policy Act (NEPA)**
 - **Pollution Prevention (P2) Program**



Laboratory Resources

13-2

Air Quality

- **Permitting and Compliance -**

- Reviews projects and obtains AQ permits;
 - Ensures compliance with AQ requirements;
 - Submits compliance reports.

- **RAD NESHAP -**

- Monitors air quality;
 - Ensures compliance with National Emission Standards for Emissions of Radionuclides

- **Meteorology -**

- Measures weather-related parameters
 - Provides weather data to Lab decision makers





Laboratory Resources

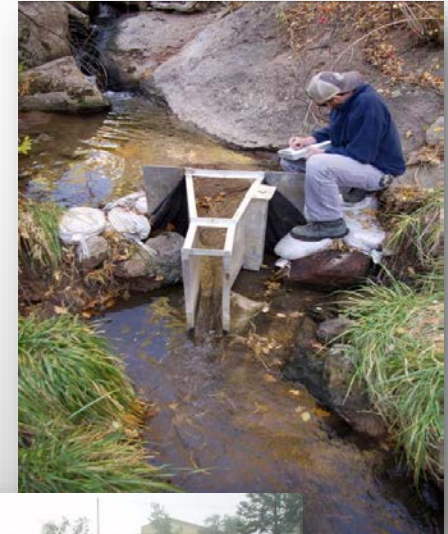
13-3

Water Quality

Water quality refers to minimizing and preventing pollution of and adverse impact to water in and around LANL.

Compliance and monitoring activities include

- evaluation and sampling
- institutional program coordination
- interpretation and application of laws and regulations
- developing institutional standards
- interacting with government agencies, stakeholders, public, and tribes on water quality and resource issues.





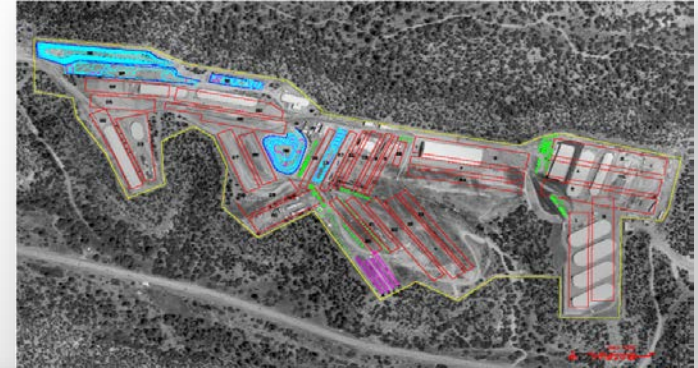
Laboratory Resources

13-3

Resource Conservation & Recovery Act (RCRA) Program

Every LANL employee is involved in the waste management process from the time of generation through ultimate disposal (“cradle to grave”).

Waste management personnel provide support in waste management, minimization, treatment, storage, disposal, and regulatory compliance.



General Employee Training: *Environment*

GET_15503_VG4,R7.5



Laboratory Resources

13-3

Biological Resources Program

Our goal is to minimize impacts to sensitive species and their habitats and to ensure that all activities and operations comply with federal and state regulatory requirements for biological resources protection.





Laboratory Resources

13-3

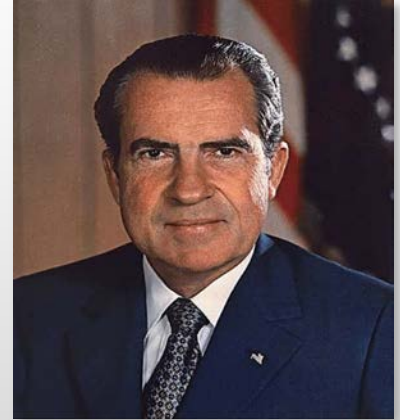
Cultural Resources Program

Our goal is to minimize impact to cultural resources, including historic buildings and structures, archaeological sites, and traditional cultural properties, and to ensure that all activities and operations comply with federal regulatory requirements for cultural resources management.



National Environmental Policy Act (NEPA) Program

Signed into law in 1970 by President Richard M. Nixon, NEPA establishes a systematic and transparent process for environmental reviews.



LANL has a Site-Wide Environmental Impact Statement that analyzed its operations in 2008.

Nearly all LANL work is reviewed to determine its NEPA coverage.



Laboratory Tools

13-4

Integrated Project Review Program

Subject matter experts from each program in ENV review new/modified activities/projects and identify environmental compliance requirements.

- **Tools include**
 - Integrated Review Tool
 - Permits Requirements Identification (PRID)
 - Excavation/Fill/Soil Disturbance (EX-ID)
 - Decision Support Application (DSA)





Laboratory Resources

13-4

Environmental Management System

All employees are expected to know how their work interacts with the environment and take measures to reduce harm.

EMS is a systematic method for

- assessing potential environmental impacts
- prioritizing improvements
- measuring results
- continuous improvement



Go to <http://ems.lanl.gov> for more information.



Laboratory Resources

13-4

- **Waste Management Coordinator (WMC) Program**
 - provides direct waste management support and guidance to LANL facility operations through deployment of trained and qualified personnel.
 - Each group, division, or facility has a WMC who serves as the primary contact for waste management and pollution prevention/waste minimization efforts.
 - The WMC is familiar with the organization's processes and procedures that generate waste and should be the first person you contact regarding waste management matters.

Note: Write the name and telephone number of your WMC on your Quick Reference Badge.



Laboratory Resources

13-4

Pollution Prevention and Sustainability

As you plan and conduct your work, consider using pollution prevention/waste minimization techniques, which include

Conservation

Source reduction

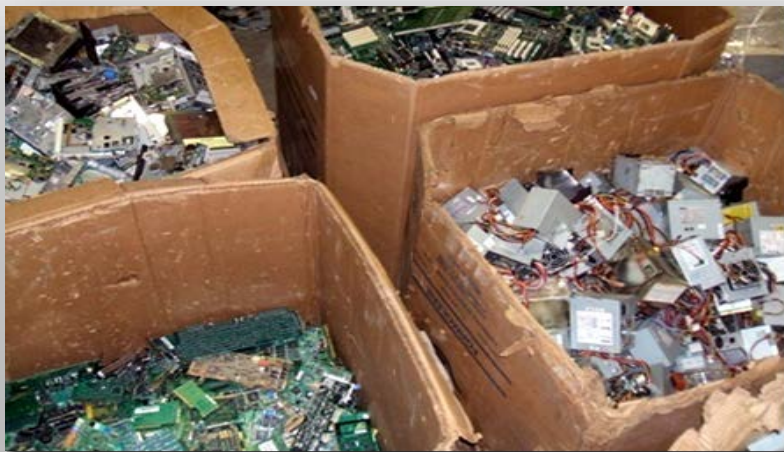
Material substitution

Waste segregation

Reuse

Recycling

Sustainable (green) acquisition





Pollution Prevention Awards

13-5

In addition to helping the environment, you might win a ca\$h award if you complete any project that prevents pollution or minimizes waste.



General Employee Training: Environment

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Cleanup and Remediation

13-6

LANL works to remedy environmental problems by bringing together multidisciplinary world-class science, engineering, and state-of-the-art management practices.

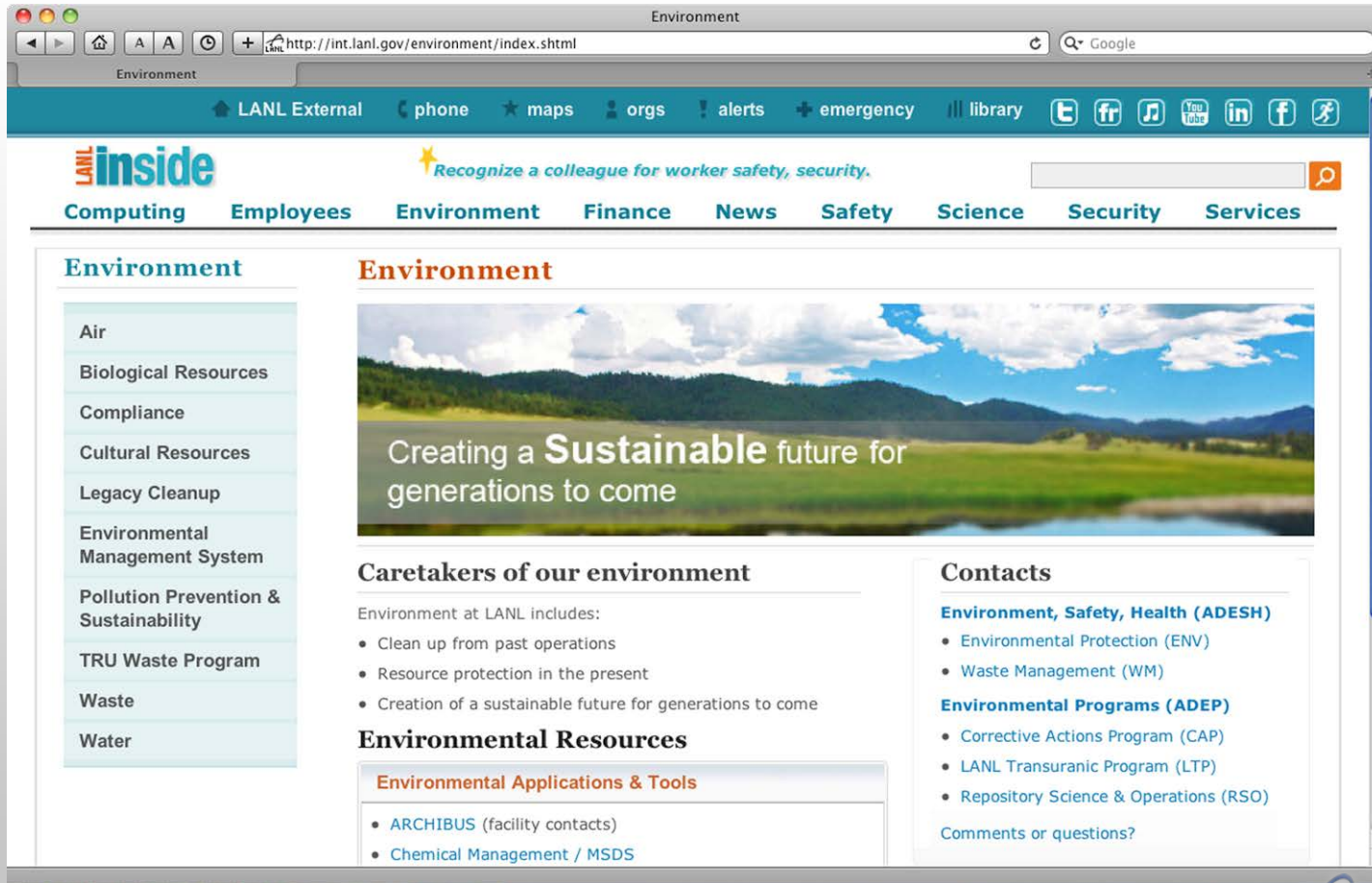


The goals are to

- **protect human health and the environment from exposure to hazardous, radioactive, and mixed wastes from the past and**
- **meet the environmental cleanup requirements of LANL's permit to operate hazardous waste facilities.**

All Things Environmental

13-6



The screenshot shows a web browser window displaying the LANL Environment website. The browser's address bar shows the URL <http://int.lanl.gov/environment/index.shtml>. The website has a teal header with navigation links: LANL External, phone, maps, orgs, alerts, emergency, library, and social media icons. Below the header is a search bar and a navigation menu with links to Computing, Employees, Environment, Finance, News, Safety, Science, Security, and Services. The main content area features a large banner image of a landscape with the text "Creating a Sustainable future for generations to come". To the left of the banner is a sidebar with a list of environmental topics: Air, Biological Resources, Compliance, Cultural Resources, Legacy Cleanup, Environmental Management System, Pollution Prevention & Sustainability, TRU Waste Program, Waste, and Water. Below the banner is a section titled "Caretakers of our environment" which lists the areas covered by the Environment at LANL: Clean up from past operations, Resource protection in the present, and Creation of a sustainable future for generations to come. To the right of this section is a "Contacts" section listing the Environment, Safety, Health (ADESH) and Environmental Programs (ADEP) divisions, along with their respective programs. At the bottom of the page is a section titled "Environmental Resources" with links to ARCHIBUS and Chemical Management / MSDS.

Environment

LANL External phone maps orgs alerts emergency library

LANL inside

Recognize a colleague for worker safety, security.

Computing Employees Environment Finance News Safety Science Security Services

Environment

Air
Biological Resources
Compliance
Cultural Resources
Legacy Cleanup
Environmental Management System
Pollution Prevention & Sustainability
TRU Waste Program
Waste
Water

Environment

Creating a Sustainable future for generations to come

Caretakers of our environment

Environment at LANL includes:

- Clean up from past operations
- Resource protection in the present
- Creation of a sustainable future for generations to come

Environmental Resources

Environmental Applications & Tools

- ARCHIBUS (facility contacts)
- Chemical Management / MSDS

Contacts

Environment, Safety, Health (ADESH)

- Environmental Protection (ENV)
- Waste Management (WM)

Environmental Programs (ADEP)

- Corrective Actions Program (CAP)
- LANL Transuranic Program (LTP)
- Repository Science & Operations (RSO)

Comments or questions?

General Employee Training: Environment

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Your Responsibilities

13-6

- To protect the environment
- To be well acquainted with Laboratory policies that pertain to your job
- To comply with environmental laws, regulations, and Laboratory requirements





Be Cautious!

13-6

Your failure to comply with permits, laws, and regulations could result in

- **finest and closures**
- **damage to human health and the environment**

You can be held personally responsible for deliberately violating environmental protection laws.





Self-Assessment Time

Environment



Examination

- 40 multiple-choice questions
- Open book (handy index at back of book)
- 80% or better to pass (get at least 32 correct)
- Test begins at 3:00; must complete by 4:30. If you think you may need more time than 1 1/2 hours, schedule yourself to come when you will have 3 1/2 hours.
- Review session Wednesday at 10:00, retake at 1:00
- Reschedule for third try if needed
- If you do not pass on the third try, you must wait 6 months before making another attempt.