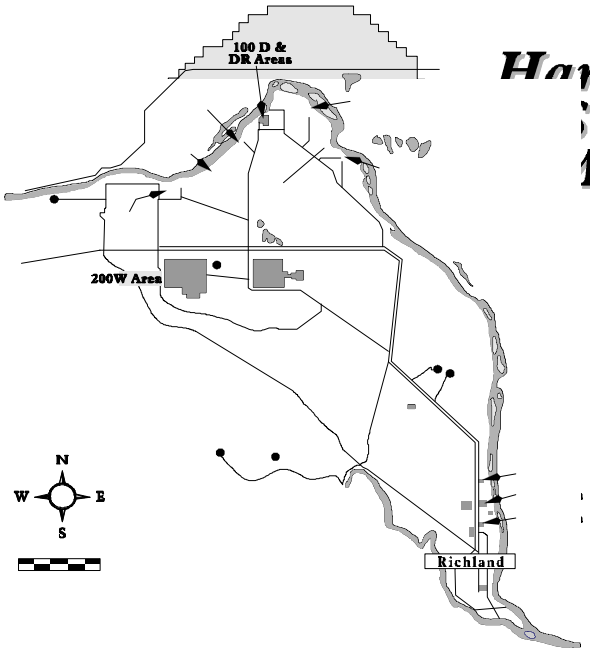
Welcome to the Hanford Site

Visitor Orientation



Hanford Site Map

For security requirements, safety measures and radiological orientation

General Information

This booklet applies to visitors of the Hanford site. It provides essential safety, health, environmental, radiological and security rules and information to help assure your safety, health and well being while visiting this Department of Energy (DOE) facility.

For your safety and the safety of others, you are to become familiar with the contents of this booklet. Your Point-of-Contact (e.g., escort, host, facility representative, contract technical representative) will provide you more complete instructions relative to unique requirements for the area(s) you will be accessing. Specific locations will require that you be physically accompanied by a designated escort. You will be notified of these areas prior to entering.

You are required to act safely, encouraged to ask questions about matters which are not fully understood and report any situation which you believe may cause an accident or injury to yourself or others.

The Hanford site was acquired by the federal government in 1943 and covers 560 square miles (1440 square kilometers) of arid land in southeastern Washington state. Facilities are grouped together in seven major areas.

100 Area	De-activated plutonium production reactors
200 Areas (East & West)	Chemical processing and waste management facilities
300 Area	Energy research and development facilities
400 Area	Fast Flux Test Facility (FFTF) and related support facilities
600 Area	Hanford site not designated as 100, 200, 300 and 400 Areas between the Wye and Yakima barricades
700 Area	Administrative buildings in Richland (e.g., Federal Building)
1100 Area	Site support services (e.g., general stores and transportation maintenance)
3000 Area	Facilities for Battelle Memorial Institute (Pacific Northwest National Laboratory)

Mission

The Hanford missions are to safely clean up and manage the site's legacy wastes, and to develop and deploy science and technology.

The Hanford site is managed by the Department of Energy (DOE) through six major prime contractors. A brief description of services is as follows:

- ***Bechtel Hanford, Inc. (BHI)*** provides site environmental restoration activities as the Environmental Restoration Contractor.
- ***CH2M HILL Hanford Group, Inc. (CHG)*** manages Tank Farm Operations.
- ***Fluor Hanford (FH)*** is the management contractor for Project Hanford.
- ***Hanford Environmental Health Foundation (HEHF)*** serves as the occupational health provider.
- ***Pacific Northwest National Laboratory (PNNL)*** provides research and development in environmental science and technology.

Safety

At Hanford, the safety and health of our workers and the public is a fundamental value. We place a high priority on managing risks through the integration of safe work requirements into all processes. Work conducted on site is controlled by safety regulations, policies, directives, and procedures — all designed to ensure a safe and healthful site environment for all personnel.

During your time on the Hanford site, you are responsible **to adhere to all instructions provided by your point-of-contact** and for the following:

Report immediately to your Point-of-Contact:

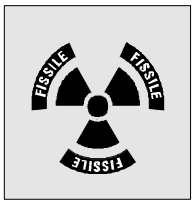
1) any personal accident or sustained injury occurring on site
2) any unusual occurrence or unsafe condition that could result in personal injury or property damage
3) perceived exposure to a hazard.

Report emergency situations (medical, fire, etc.) and obtain assistance:

1) dial 911 from any on-site or personal cellular phone, stating your name, location and nature of emergency
2) in event of injury or illness, provide name(s) of individual(s) affected and brief description of problem (if known) — for example; difficulty breathing, bleeding, etc.
3) stay on the line and follow any instructions given.

Accident prevention warnings and notices in the form of signs, labels, tags and barriers are used extensively throughout the site to communicate hazard information to personnel. Watch for them, read them and comply with the posted message. Never cross over or through erected barricades or other physical boundaries.

(Continued on page 5)



When required, wear the prescribed personal protective equipment provided to you — such as; hard hats, eye protection, hearing protection, hand protection or special protective clothing.

Wear appropriate footwear for the work location and weather conditions anticipated.

Operation of any equipment or machinery is prohibited, unless expressly permitted by Plant Management.

Become familiar with the location of fire exits and means of egress in and out of buildings.

Use handrailing when accessing stairways.

Do not climb any access ladders without express permission from your Point-of-Contact.

Use designated walkways and crosswalks, maintaining a personal awareness to tripping/slipping hazards and uneven walking surfaces.

Stay clear of overhead work activity and moving equipment/vehicles.

Basic Radiation Protection

Basic Radiation Concepts

What Is Radiation?

Radiation is energy that is emitted from an unstable atom. It can be in the form of a particle (alpha, beta or neutron radiation) or a ray (gamma or x-ray).

Radiation can also be classified ad **ionizing or non-ionizing**. Ionizing radiation has enough energy to remove electrons from the atoms that it passes through. This section of the booklet covers ionizing radiation. Non-ionizing radiation lacks the energy to remove any electrons from neighboring atoms. Examples of non-ionizing radiation are radiowaves, lasers, and microwaves.

Another term associated with radiation is **radioactive contamination**. In simple terms, radioactive contamination is having radioactive material in a location where it is not wanted. Radioactive contamination areas are strictly controlled at Hanford to prevent the spread of contamination.

What About Radiation Exposure?

Everyone is exposed to naturally occurring radiation everyday. This exposure is expressed as a dose equivalent. The unit of its measure is called "rem." The vast majority of exposure at Hanford is measured in millirem or "mrem," which is 1/1000 of a rem. In the United States, the average person receives a radiation dose of approximately 360 mrem each year from naturally occurring background radiation and manufactured sources.

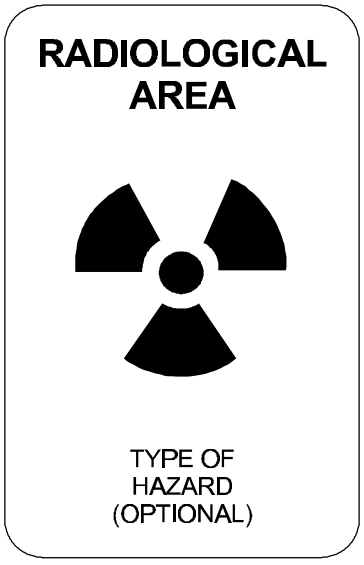
(Continued on page 7)

How Do I Identify Radiological Hazards?

Any area in which there is a potential for exposure above background to radioactive materials is strictly controlled. A combination of special training, administrative controls, and physical controls [including radiological postings (signs) and barriers] are used to restrict access to these areas. Examples of these areas are:

- Fixed Contamination Areas,
- Underground Radioactive Material Areas,
- Radioactive Material Areas,
- Radiological Areas.

All radiological hazards at Hanford are easily identifiable by the use of the international sign for radiation—a black or magenta trefoil on a yellow background with the words "Caution" or "Danger". Entry into any of these areas requires specific training and strict compliance with access requirements.



(Continued on page 8)

Radiation Risks

Exposure to ionizing radiation may increase your chances of developing cancer. Although the scientific community lacks consensus on how much exposure is acceptable, most experts believe that you should limit your exposure to radioactive materials.

- Remember that it is impossible to prevent your exposure to naturally occurring sources of radiation exposure. However, you can control your exposure to manufactured sources of radiation.

Chronic exposure occurs when an individual receives a dose of radiation (typically a low dose) over an extended period of time (usually months to years). Exposure to naturally occurring background radiation is an example of chronic exposure.

Acute exposure occurs when an individual receives a high dose of radiation in a short period of time (seconds to days). Firefighters at the Chernobyl Plant received acute doses of radiation.

Heritable effects are passed from one generation to the next. High levels of radiation exposure to animals have been demonstrated to produce such effects. However, no heritable effects have been observed in humans as a result of radiation exposure.

Is There a "Safe" Dose of Ionizing Radiation?

The scientific community has not developed a definitive answer to this question. The potential risk of working with or around radioactive materials can be compared to other accepted risks in our everyday lives.

The following data addresses the expected effect on the average life span of a large population of individuals subjected to the listed risk factor/behavior. The subsequent average loss of life expectancy is expressed in days.

(Continued on page 9)

Health Risk	Estimated Days of Life (Expectancy Lost)
Smoking (1 pack/day)	3500
15% Overweight	777
Alcohol Consumption (US Average)	365
Construction Worker	227
Driving a Motor Vehicle	205
All Industry	60
Radiation Dose of 100 mrem/year (for 70 years)	10
Coffee (US Average)	6

In summary, the estimated risk associated with radiation exposures, when compared to other risks, is considered to be within the normal range of the general public's risk tolerance.

(Continued on page 10)

Basic Radiation Protection (cont'd)

How Are Radiological Risks Managed At Hanford?

The key to managing radiological risks at Hanford is to keep exposures to radiation and other hazardous materials **"As Low As Reasonably Achievable"**, or **"ALARA."** The cornerstone of the ALARA philosophy is to evaluate all hazards before operations begin and design appropriate controls into the project.

The main **ALARA tools** are:

- Reduce TIME near the hazard,
- Increase the DISTANCE from the hazard,
- Increase the SHIELDING between you and the hazard,
- Reduce the amount of radioactive material (e.g., decontamination).

(continued on page 11)

What Are the Radiological Controls At Hanford?

Engineered and administrative controls keep radiation exposures ALARA.

Engineered controls are physical and/or mechanical devices used to reduce the risk from hazards (radiation, chemical, etc.). Engineered controls are the primary means of controlling radiation exposure at Hanford. They include:

- Shielding,
- Proper ventilation,
- Containment devices, such as gloveboxes,
- Interlocks on enclosures.

Administrative controls are procedures and policies used to minimize the risk from hazards. Administrative controls supplement engineered controls to provide a safer workplace. Administrative controls include:

- Warning signs (e.g., radiological postings),
- Safety procedures,
- Radiological Work Permits (RWP's).

In addition, Hanford uses **administrative control** levels to keep your annual exposure well below the legal dose limits. Visitors are limited to 100 mrem/ year. General employees are expected to receive less than 100 mrem/year. Trained radiological workers are limited to 500 mrem/year.

(continued on page 12)

Basic Radiation Protection (cont'd)

What About Pregnant Women?

The embryo/fetus is more sensitive to radiation and other environmental hazards than adults. If you are pregnant, you must decide if the expected benefits of your visit outweigh any risks associated with the embryo/fetus potentially receiving radiation exposure. If you are unsure or have any concerns, talk to your host/escort, who will contact the Radiation Protection Organization to discuss radiation effects during pregnancy. Radiological workers who are pregnant are limited to 500 mrem for the duration of the gestation period.

How Do I Protect Myself and Others in the Event of a Radiological Event Or Emergency?

- Refer to the "Emergency Preparedness" section of this booklet.

What Are the Rights and Responsibilities of Each Person Accessing the Hanford Site?

- Refer to the "Visitor & Host/Escort Responsibilities" section of this booklet.

(continued on page 13)

Will I Have To Wear a Dosimeter At Hanford?

A **dosimeter** is a device used to measure an individual's exposure to external radiation. It is typical for most employees to receive no measurable occupational dose. Radiological workers wear dosimeters to measure their dose. **Most likely, you will not be entering areas that require dosimeters to be worn**. You will be issued a dosimeter if you will enter areas where dosimeters are required, or if you have the potential to receive a dose that requires dosimetry.

Are There Any Special Instructions For Wearing and Caring For a Dosimeter?

In the event you are required to wear a dosimeter, follow these instructions:

- Wear the dosimeter facing out on the upper part of your body, with no obstructions that may shield the dosimeter (including plastic cards),
- Do not wear your Hanford dosimeter at facilities other than those at Hanford,
- If you have received or will be receiving medical treatments involving radiopharmaceuticals, do not wear the dosimeter; notify your host/escort - who will in turn notify the Radiation Protection Organization,
- Do not expose your dosimeter to excessive heat or moisture,
- If you lose or damage your dosimeter, immediately report the occurrence to the Radiation Protection Organization.

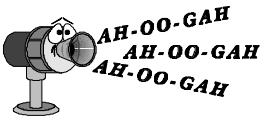
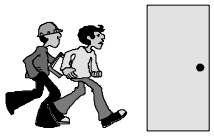
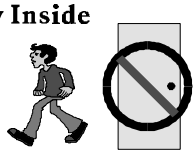
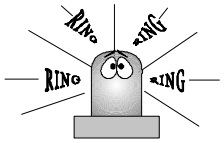
Dose Reports

Dosimeters must be returned when you finish your visit. Visitors assigned a Dosimeter will receive a report in thirty to ninety days after their visit. Anyone Can request a dose report by calling PNNL Dosimetry at (509) 376-7247.

Emergency Preparedness

Health Care Centers are located at 2719 WB (200 West) and at 3080 George Washington Way. Any injury, illness or potential exposure must be reported to an escort or assistance may be requested from the nearest employee.

Call 911 for fire, medical, patrol or hazardous materials response.
Call 375-2400 for emergencies at PNNL.
Call 373-3800 for other emergencies or assistance.

SIGNALS	MEANINGS	ACTIONS
Howler 	**Criticality**	**Run** 
Gong or Horn 	**Fire**	**Evacuate** 
Siren. Wavering Tone for 3 - 6 mins. 	**Take Cover**	**Stay Inside** 
Siren. Steady Blast for 3 - 6 mins. 	**Evacuation**	**Go to Staging Area** 
Ringing Bell & Flashing Red Light 	**High Airborne Radioactivity**	**Evacuate Area** 

A tape recording of these emergency signals, with response instructions, may be heard by dialing 373-2345. In the 400 Area, dial 376-4444.

(Continued on page 15)

(cont'd) Emergency Preparedness

In the event of emergency, or during a drill, follow the instructions of your escort. If you become separated from your escort, or if you do not have an escort, seek assistance from the nearest employee.

Facility specific orientation will discuss response to emergency alarms, location

Visitor & Host/Escort Responsibilities

Visitor Responsibilities

- Obey all instructions of your host or escort.
- Obey all signs and postings. There are safety, security and radiological postings located throughout the Hanford site for your protection.
- Do not enter any radiological areas or work with any hazardous materials without specific authorization and training.
- Comply with emergency procedures.
- Keep your exposure ALARA.
- Sealed and unsealed radioactive sources shall not be brought on site by external organizations without the prior written approval of the appropriate contractor's Radiological Control Organization.
- If you are going to be on site for more than one week or will be performing work in a radiological area, you need additional training. Check with your host/escort.

(Continued on page 16)

Visitor & Host/Escort Responsibilities (cont'd)

Host/Escort Responsibilities

- Determine the facilities and areas where access will be required.
- Determine training and escort requirements for those areas.
- Arrange for appropriate training, escort(s), and dosimetry.
- Provide facility specific training and orientation, where applicable.
- Ensure your visitor receives the appropriate training before permitting access to radiological areas.
- Ensure visitor accesses only the areas and/or materials authorized by the visit.
- Limit the visitor's access into Radiological Areas.
- Ensure prohibited items are not brought onto the Hanford site. Refer to section on "Prohibited Articles."
- Obtain special approvals and training to host foreign nationals.
- Complete history forms for visitors issued a dosimeter for entry into those areas listed in the Radiological Control Manual.

Security Badge Responsibilities

With the exception of Public Access Areas, security badges are required in all Hanford site areas and all DOE contractor-leased or government-owned facilities. Protective force personnel are authorized to confiscate security badges that are misused, damaged, or invalid.

(continued on page 17)

Security Badge Responsibilities (cont'd)

Visitor Responsibilities

- Carry photo identification with you at all times.
- Wear your badge conspicuously above the waist and in plain view on your outer most layer of clothing.
- Use your badge for official use only. Protect your badge from loss and misuse. Do not transfer or loan your badge to anyone else.
- Show your badge and identification at all access points. Patrol may be required to touch your badge.
- Stay in contact with your assigned host or escort.
- **RETURN YOUR SECURITY BADGE TO YOUR HOST/ ESCORT OR ANY ACCESS CONTROL CLERK AT THE END OF YOUR VISIT OR ASSIGNMENT.**
- If you lose or misplace your security badge during your visit, notify your host/escort or the Hanford Patrol immediately.

Host/Escort Responsibilities

- Ensure that your visitor is wearing his or her badge and dosimeter (if one was issued).
- **ENSURE THAT YOUR VISITOR'S BADGE IS RETURNED AT THE END OF THE VISIT OR ASSIGNMENT.**

Prohibited Articles

Certain articles are not allowed while visiting the Hanford site without prior authorization. These items include:

- illegal drugs, drug paraphernalia or alcohol (includes "near beer"). Prescription narcotics must be in a container containing information on patient, narcotic and physician;

- explosives or incendiary devices;

- dangerous weapons or ammunition
  EXCEPTIONS: kitchen knives, pocket knives and cutting tools specifically related to a job, such as an electrician's knife, carpenter's cutting tools, etc.;

- privately owned cameras or computers and associated media are not permitted in limited or protected areas (areas used to protect classified matter and special nuclear materials);

- privately owned recording or transmitting devices are not permitted in limited or protected areas;

- pets and animals, except for guide dogs.

Caution: Visitors are subject to vehicle and personal article searches at any time during a visit while on the Hanford site or in a government-owned or contractor-leased facility.

While at Hanford

Obey Washington state traffic laws. The Benton County Sheriff's office is responsible for traffic and criminal investigations on the Hanford Site.
Report unsafe conditions and practices to your host/ escort.

Be alert for deer and other wildlife that may be on the road.

Stay on designated roads and walkways.

Park in designated parking areas. Handicapped parking permits are required to park in handicapped spaces on site.

Observe and obey all posted signs and barricades.

Be prepared for changes in road conditions or slow moving vehicles.

Smoking is prohibited in all DOE-owned or leased facilities, all government vehicles and near flammable gases, liquids, and dry vegetation. Smoking is permitted outside in designated areas only.
Dispose of litter and cigarettes in proper depository.

Do not pick flowers, disturb wildlife or remove any artifacts.

General Information Phone Numbers

DOE..... 376-7411
FH..... 376-7411
PNNL..... 373-9346
BHI..... 372-9041
HEHF..... 373-3155

Emergency Phone Numbers

Emergency (Medical/Fire) …. 911
PNNL 375-2400
Hanford Patrol 373-3800
Benton County Sheriff
Hanford Substation 376-1022

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Richland Operations Office

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