



# UTSA

## Laboratory Safety

# X-RAY SAFETY PLAN

Laboratory Safety Division

**UTSA**

Office of the Vice President for  
Research, Economic Development,  
and Knowledge Enterprise

2021

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# REVIEW PAGE

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This version of the manual has been reviewed for regulatory compliance and best management practices by the listed individuals and committees and is hereby adopted for use and compliance by all employees at the University of Texas at San Antonio owned or operated facilities.

NAME	TITLE	DATE
Dianna Olukotun	Radiation and Laser Safety Coordinator, RSO	11-05-2021
Amanda Haley	Sr. Director, Laboratory Safety and Compliance	11-05-2021
Michelle Stevenson	Associate Vice President for Research Integrity	11-05-2021
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## COMMITTEE

COMMITTEE	REVIEW DATE	APPROVAL DATE
Radiation and Laser Safety Committee	10-01-2021	11-05-2021

Review: November 5, 2021  
Replaces: December 4, 2020 Version  
Review Frequency: Annual

According to regulations the contents of this plan will be reviewed whenever relevant sections of the Texas Administrative Code on the use of radiation machines are changed and whenever internal policies mandate a review. A review must be completed no less than once every three years.

Changes to the plan are highlighted in “gray” and summarized below.

SECTION	SUMMARY OF CHANGE
Review Page	Changed contact details
Occupational exposure limits for adults	Added special considerations for handheld x-ray device users
Requirements for personnel	X-ray safety training course specified for users
Posting notices	Laboratory Safety Office number for signage updated

# EMERGENCY CONTACTS

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<b>ROUTINE OFFICE HOURS (8 am – 5 pm)</b>	
Radiation Safety Officer	210-458-5807
Radiation and Laser Safety Personnel	210-458-6697
Occupational Health Coordinator	210-458-4038
<b>AFTER-HOURS (including weekends)</b>	
UTSA Police	210-458-4911 (cell or outside phone) x4911 (from a campus phone)
<b>LIFE-THREATENING EMERGENCIES (any time)</b>	
UTSA Police	210-458-4911 (cell or outside phone) x4911 (from a campus phone)

# OVERVIEW

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This plan contains guidelines to assist in complying with the regulation established by the state and federal governments for the possession and use of radiation machines at the University of Texas at San Antonio (UTSA). These regulations are written to provide protection against exposure to ionizing radiation resulting from the use of radiation machines. These regulations refer to X-ray devices, Medical X-ray devices or X-ray producing machines as radiation machines and this terminology will be used throughout this plan.

A person who receives, possesses, uses, owns, or acquires radiation machines must ensure the machines are added to UTSA's certificate of registration and is subject to the requirements of this plan as well as all pertinent Texas Department of State and Health Services (TXDSSH) regulations.

# SCOPE

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This plan applies to persons who receive, possess, use, or transfer radiation machines at UTSA. The dose limits in this plan do not apply to doses due to background radiation, exposure of patients to radiation for the purpose of medical diagnosis or therapy, or voluntary participation in medical research programs. However, no radiation may be deliberately applied to human beings except by or under the supervision of an individual authorized by and licensed in accordance with Texas' statutes to engage in the healing arts. Medical research programs must be approved by the Institutional Review Board (IRB) and the Texas Department of State Health Services (TXDSSH) as well as the Radiation and Laser Safety Committee (R&LSC).

# X-RAY SUBREGISTRATION APPLICATIONS

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All x-ray machines and ionizing radiation producing devices must be registered with the TXDSSH under UTSA's x-ray registration. The Radiation Safety Officer manages UTSA's registration.

# RESPONSIBILITIES

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## RADIATION SAFETY OFFICER (RSO)

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1. Reviewing all proposals for use of radiation machines; and approving or disapproving them in conjunction with the R&LSC.
2. Inspecting facilities and equipment.
3. Prescribing special conditions and requirements as necessary for safe and proper use of all radiation machines.
4. Acting as a consultant in the design of all new facilities using radiation machines.
5. Development and maintenance of the UTSA training courses on x-ray and radiation safety.
6. Maintaining records on the receipt, transfer, and disposal of radiation machines. Maintaining an annual inventory.
7. Performing annual radiation surveys and monitoring all facilities in which radiation machines are used or located. Surveys include, but are not limited to radiation level, record checks and interlock tests.
8. Providing personnel monitoring services, including the reviewing, and recording of commercially processed dosimeter reports as required by the regulations or deemed advisable by university standards.
9. Ensuring that safety guidelines and requirements are followed in the laboratories utilizing radiation machines.
10. Maintaining proper labeling and signage in areas where radiation machines are operated.
11. Preparing registration applications, amendment applications, and required reports as well as serving as the primary contact for all correspondence with State and Federal radiation health agencies.
12. Investigating unusual or unexpected radiation exposures, incidents, and accidents and reporting corrective action to the principal investigator, supervisory personnel, and R&LSC.

## PRINCIPAL INVESTIGATORS AND SUPERVISORY PERSONNEL

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Members of the faculty or staff supervising the work of others; either in a teaching capacity, as a principal investigator, or in an administrative supervisory position; are responsible for ensuring that those under their supervision:

1. Certify their understanding of the individual responsibilities per section IV.c. of this plan.

2. Receive appropriate orientation and training as to the proper and safe use of the particular radiation machine(s) before operation.
3. Have knowledge of the harmful effects of radiation to which they may be exposed.
4. Are instructed in safe techniques, such as the application of approved radiation safety practices and the proper use of radiation detection instruments.
5. Have thorough knowledge of this plan.

They are further responsible to ensure that:

1. All radiation machines under their control have been properly approved by the RSO and/or the R&LSC and that all potential hazards are brought to the attention of the Radiation Safety Personnel (RSP).
2. Appropriate radiation surveys are conducted if required such as following transfer or repair.
3. All necessary records are maintained.
4. Radiation Safety Personnel are notified when new personnel are added or (in advance) when personnel under their supervision terminate or conclude activities that involve radiation machines.
5. Local laboratory safety procedures are established, with the assistance of RSP if necessary, and approved by the R&LSC.
6. Written laboratory procedures for operating any radiation machine particular to their lab are developed and maintained, in consultation with the RSO as needed. These require R&LSC approval.
7. Those directly or indirectly under their supervision receive equipment and training as required for their specific location and use.

## **INDIVIDUAL LABORATORY USERS**

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Individuals are responsible for:

1. Following safety procedures and practices in this plan and any additional ones established for the specific laboratory or radiation machine.
2. Keeping exposures to radiation as low as reasonably achievable (ALARA).
3. Wearing appropriate dosimetry as required and strictly following the regular badge change schedule.
4. Immediately reporting to RSP any suspected exposure in excess of permissible limits.
5. Furnishing information to the RSP concerning new activities in their area, particularly alterations of operations that might lead to personnel exposures.

6. Performing appropriate surveys for external radiation if required and maintaining records of results or requesting assistance from RSP.
7. Contacting the RSO at least ONE WEEK before terminating employment or association with UTSA.
8. Assuring that acquisitions and transfers of radiation machines are made in accordance with the provisions of this plan.
9. Reading and understanding the lab procedure for operating radiation machines particular to the lab they work in.



# X-RAY SAFETY AT A GLANCE

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Summary of the minimum requirements to work with radiation.

## APPROVALS

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Committee	Oversight	Website
RLSC	Use of x-ray devices	<a href="#">RLSC</a>
IBC	rDNA/RNA, Infectious agents, Biohazards	<a href="#">IBC</a>
IACUC	Use of animals	<a href="#">IACUC</a>
IRB	Human subjects	<a href="#">IRB</a>

## TRAINING

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How	Content	Where
X-Ray Safety Training	X-Ray Safety	<a href="https://utsa.bioraft.com/">https://utsa.bioraft.com/</a>
Written document	X-Ray Safety Plan	<a href="#">X-Ray Safety Plan</a>
Written document	Lab specific safety plans and training	Keep documents and records in the lab

## OCCUPATIONAL HEALTH

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What	Contact Information	Who
Medical Surveillance	Occupational Health: 210-458-5304	Works with/exposed to hazards
Lab Animal Occupational Health Program	Occupational Health: 210-458-5304	Works with/exposed to animals

## SAFETY

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Tools	When	How
Radiation Monitoring Devices	Processed quarterly	Contact the RSO
Personal Protective Equipment	Per risk assessment	Contact the RSO
Non-exempt, sealed sources	Every 36 months	Contact the RSO

Please contact the Laboratory Safety Division with questions or to request a consultation:

Email: [LabSafety@utsa.edu](mailto:LabSafety@utsa.edu) Telephone: 210-458-5807

# SAFETY CULTURE

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## WHAT IS SAFETY CULTURE

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Safety culture is a part of organizational culture and is often described by the phrase “the way we do things around here”. According to the American Chemical Society, safety culture at an academic institution is a “reflection of the actions, attitudes, and behaviors” demonstrated by the faculty, staff and students concerning safety”.

Several high-profile accidents in the research world have led to the realization that ensuring excellence in research requires a strong, positive safety culture throughout the University. This means that safety is viewed as an operational priority, because of the benefits thoughtful, safe procedures and attitudes bring to research.

## SAFE RESEARCH AT UTSA

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Research and education in science laboratories involves a variety of hazards. It is the University of Texas at San Antonio’s (UTSA) policy to protect and promote the health and safety of students and employees as well as the environment. As an educational institution UTSA endeavors to impart a foundation of safety culture that will prepare students to be safe and skilled scientists in academia or industry.

Safety in the laboratory can be achieved only with the exercise of sound judgment and proper use of facilities by informed, responsible individuals.

Safe research starts with recognizing that safety is a fundamental part of the scientific process, adding value by exerting greater control, reducing uncertainty, and increasing the safety and quality of your results or product.

## RESEARCH SAFETY EXPECTATIONS

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The University expects that all members of our research community integrate safety into their research activities and go beyond minimum compliance. The following elements (Fig 1) help lay the foundation to build and support a safe and productive research environment:



## A. Leadership

**Lead by example, adhere to the rules, and be willing to speak up if you see unsafe practices. Faculty and other supervisor are urged to include safety on the agenda and incorporate it into their group thinking and practices.**

- *Lab members openly discuss safety concerns.*
- *PI/laboratory manager and research group members maintain an environment in which personnel feel free to raise concerns.*
- *Actions confirm safety as a priority that supports and is compatible with good research.*
- *The feedback loop on safety issues (bottom-up and top down) is closed (addressed) at the PI/lab management level.*

## B. Design

**Take the time to systematically assess risk and plan for the hazards identified. Incorporate safety into laboratory procedures.**

- *PI/lab manager understands the risks of the research being conducted, are actively involved in the laboratory safety program, and integrate safety into the laboratory research culture.*

## C. Execution

**Take action to control your risks. Make sure you have the right protective equipment, engineering controls are working correctly, and researchers are trained to safely perform their work. Principal investigators must enforce the established controls in their lab.**

- *PI/lab manager ensures that the personnel, equipment, tools, procedures, and other resources needed to ensure safety in the academic research laboratory are available.*
- *Lab members identify and manage their own safety environment and are receptive and responsive to queries and suggestions about laboratory safety from their lab colleagues.*
- *Lab members conduct their research using protocols and procedures consistent with best safety practices in the lab.*

## D. Adaptability

**Research is not a static endeavor; managing safety requires ongoing reassessment, feedback, and reinforcement. Encourage reporting by members when identifying and reviewing lessons learned after and using these as teaching opportunities. Involve all lab incidents and near-misses.**

- *PI/lab manager evaluates the laboratory safety status themselves and knows what and how to manage changes to enhance safety in the laboratory.*
- *The PI/lab manager and lab group supports a continuous learning environment in which opportunities to improve safety are sought, communicated and implemented.*
- *Safety discussions become part of regular lab meetings; near misses within the lab are reported in a timely manner and safety information is requested by lab members to prevent future mishaps through understanding HOW and WHY.*

# RESEARCH LABORATORY MANAGEMENT

## A. Delegation

Within a lab responsibility for various activities and training may be delegated, by the PI, to a Laboratory Manager, Senior Researcher or Graduate Student. This can provide valuable experience and ensure there are several individuals assisting less experienced researchers. However, there are often two potential issues associated with this model: (1) the delegation involves responsibility but may have little or no authority or power to enforce practices, and (2) communication between the PI and Manager can be affected by numerous demands on PI time. Preparing for these challenges assists in developing and maintaining a strong and healthy research environment. Some key aspects of effective delegation include matching the correct skill level to the task, having firm goals, and providing solid support.

## B. Psychological Safety

Cultivating psychological safety within the culture of a research group provides the basis for a sense of openness and trust. These group-level interactions provide a conducive environment for lab members to feel accepted and respected (Fig 2). When psychological safety is rooted in a lab's culture, the ability to address the potential physical safety and health issues inherent in conducting research is enhanced. With greater safety comes greater control and better science.

Psychological Safety has been shown to provide workplace benefits in different ways, including:

- *Acknowledges limits of current knowledge and improves team innovation*
- *Improves likelihood that an attempted process innovation will be successful*
- *Promotes active listening and learning from all members*
- *Increases capacity to learn from mistakes*

Good lab management and leadership provides a closed loop for Psychological Safety. The two most essential actions identified for this functionality are (1) participatory management and (2) Inclusive management. A clear team structure and strong team relationships are characteristics most conducive to Psychological Safety.

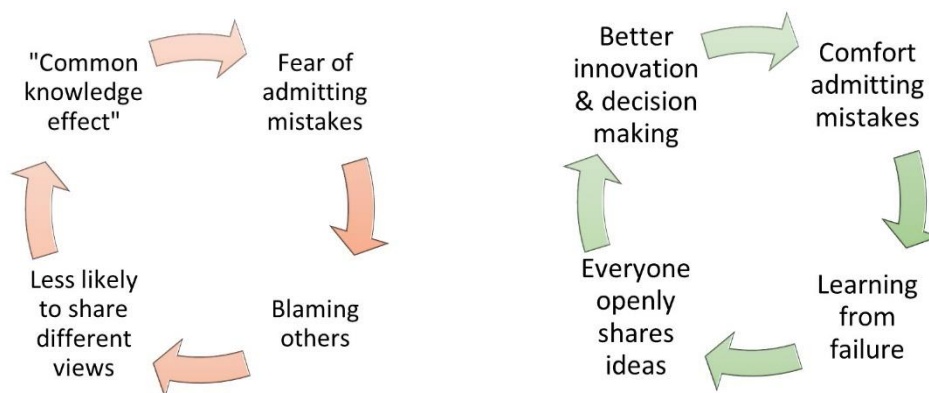


Figure 2. Psychological Danger vs Psychological Safety

## RISK ASSESSMENT FOR RESEARCH

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Evaluation and assessment of risk is a key part of designing and conducting an experimental protocol. Not only does a thorough risk assessment allow researchers to systematically identify and control hazards, but it also improves the quality of science through more thorough planning, a better understanding of the variables, and by sparking creative and innovative thinking. It allows one to implement tighter controls which reduces uncertainty and increases the safety and quality of results and / or products. Failure to consider risk and hazards from the beginning of experimental design can produce delays, roadblocks, and frustration later in the process.

The Risk Assessment process is broken down into four steps: and by sparking creative and innovative thinking.



### A. Explore

Determine the scope of your work, beginning with research objective. What question(s) are you trying to answer? Conduct a broad review of the literature. Speak with others who have done similar work. Are the risks different for different approaches?

### B. Plan

Outline your procedure/tasks. This may include a deeper dive into specific topics in the literature. Determine hazards associated with each step, and control measures for reducing risk. The Laboratory Safety Division can help with more detailed guidance on how to handle certain hazards.

### C. Challenge

What assumptions did you use? Question the importance of each step. Seek advice from others. Ask yourself “what could go wrong?”. Have I missed anything? Consider all possible outcomes, how high is the risk?

### D. Assess

Implement a model, prototype, or trial run. Can you perform a dry run to familiarize yourself with equipment and procedures? Can you test your experimental design at a smaller scale or with a less hazardous material? Determine if any design changes are needed. Run your experiment and monitor how your controls perform. Assess as you go and make changes as needed.

## HIERACHY OF CONTROLS

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Controlling exposure to hazards is a fundamental reference for protecting individuals against hazards. The hierarchy of controls is commonly represented as:

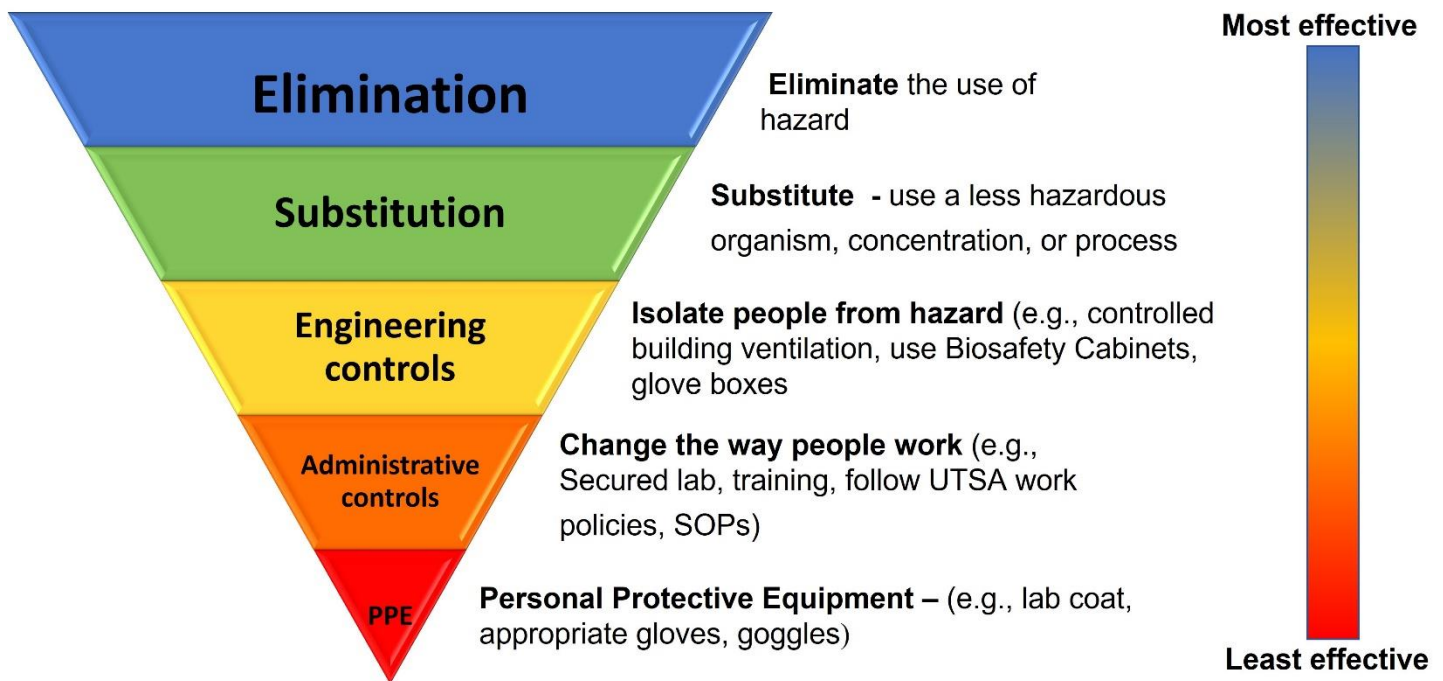


Figure 3. Hierarchy of controls for minimizing hazards.

#### A. Elimination

While elimination of a hazard is always the safest option it is often not practical in the research environment. Elimination of hazards can be effective when designing new projects but difficult or impossible for existing studies. An example of eliminating a hazard would be autoclaving biological materials therefore removing the biohazard potential.

#### B. Substitution

Substitution is often an easier option in procedures. Substitution can be common in many biological studies involving infectious agents where a virulent pathogen is replaced with a less virulent, or attenuated strain.

#### C. Engineering Controls

Engineering controls are a key laboratory feature and are designed to remove the hazard at the source before it can encounter the worker. Engineering controls are highly effective as a safety measure if they are used correctly. Examples of the most used engineering controls in biological facilities are Biosafety Cabinets. These are highly effective at protecting the worker and the samples. However, to be effective the worker must understand how to safely use the equipment and maintain it.

#### D. Administrative Controls

Administrative controls are used extensively to support safety in facilities. Examples of administrative controls include Standard Operating Procedures (SOPs), Safety Committee protocols, training, and safety plans. The effectiveness of administrative controls is often overlooked as it can be time consuming however, they are an essential component of any strong safety program.

## **E. Personal Protective Equipment**

Personal Protective Equipment (PPE) is generally considered one of the least effective safety controls. PPE does not control the hazard at the source rather protects the worker if all other control methods have failed. As with engineering controls, PPE is only effective if used and maintained correctly.

# USE OF RADIATION MACHINES

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## REGULATIONS

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All radiation machines are regulated by state and federal laws enforced by the Texas Department of State Health Services (TXDSHS) and the Food and Drug Administration (FDA). UTSA will comply with the regulations as listed on the registration from TXDSHS. The listed Texas Administrative Code sections are: [§289.203](#), [.204](#), [.205](#), [.226](#), [.227](#), [.228](#), [.231](#), and [.233](#).

## REGISTRATION

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All radiation machines must be registered with TXDSHS Radiation Control Program by the RSO if used, stored, or owned by UTSA. All units are to be registered within thirty days of initial use except a mammographic unit that must be registered and approved before use. Administration of any radiation to human beings at UTSA for medical research purposes requires approval of the R&LSC, the IRB, and the TXDSHS. Approval of a human research protocol may require four to six weeks. The RSO should be contacted as much in advance as possible for any research involving patients or human subjects to allow time for all the required approvals/registrations. Administration of radiation to living vertebrate animals requires approval of the Institutional Animal Care and Use Committee (IACUC) as well as the R&LSC and TXDSHS. All other work involving radiation machines requires RSO and/or R&LSC approval.

Contact the RSO when planning to purchase and install a radiation machine. Furthermore, relocating a machine and major repairs or replacement of tube head requires notification to RSP. Registration of the individual units will be done by the RSO. Disposal, transfer, or sale of a radiation machine must be pre-approved by the RSO so the unit may be deleted from the registration list and responsibly transferred or disposed. The name of the individual or company receiving radiation machines that are transferred or sold is required when notifying the TXDSHS of the deletion from UTSA's registration and must be kept on file by the RSO.

Copies of assembler's installation reports are to be sent to the RSO. If possible, arrangements should be made to have RSP present at the time of installation and first generation of x-rays so that any questions about the operation of the machine and any safety issues may be adequately addressed. Initial surveys are required following the installation of a radiation machine.

## COMPLIANCE WITH TECHNICAL STANDARDS OF RADIATION MACHINES

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All radiation machines will comply with the technical standards of Texas regulations unless an exemption has been requested and received from the TXDSHS. Copies of the regulations are located at the Laboratory Safety Division Office or online at the [TXDSHS website](#).

## RADIATION SAFETY SURVEYS

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Radiation safety surveys will be performed annually by the RSP in accordance with Texas regulations. Surveys should be performed on new equipment before use begins to determine the requirements for any shielding in



the area of installation. A survey may be required after major repair is performed or a tube head is replaced. Contact RSP when such repairs or replacements are performed upon a unit.

## **PERSONNEL DOSIMETERS**

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Any person likely to receive greater than 10% of the annual occupational dose limit (500 mrem for adults) will be required to wear a personnel dosimeter while utilizing radiation machines. The dosimeter may be a monthly, bimonthly, or quarterly badge according to exposure levels. Dosimeters are provided to anyone likely to receive a significant dose above background. Note that special limits and conditions apply to declared pregnant women, minors, and members of the general public.

The dosimeter:

1. shall be worn between the neck and the waist at the unshielded portion of the whole body likely to receive the highest dose.
2. shall be worn at the neck **outside** of the apron, if a lead apron is worn.
3. shall be worn only by the individual assigned the dosimeter.
4. shall be kept in a safe, low radiation area when not being worn.
5. shall never to be exposed deliberately to radiation or willfully damaged.

A fetal/embryo badge will be issued to a woman who has declared her pregnancy in writing to her supervisor and the RSO. This is to be worn at abdomen level under a lead apron if a lead apron is already in use for the activities involving radiation machines.

## **OCCUPATIONAL EXPOSURE LIMITS FOR ADULTS**

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1. **The Maximum Permissible Dose Limits** as per regulations are specified below:

- a. The total effective dose equivalent being equal to: **5 rem/year**
- b. A shallow dose equivalent to the skin or to any extremity of: **50 rem/year**
- c. An eye (lens) dose equivalent of: **15 rem/year**

2. **Additional recommended limits for special situations include:**

- a. Fetus during entire pregnancy not to exceed: **0.5 rem**
- b. Minors (under 18 years old) are not to exceed 10% of the annual adult dose limits for radiation workers.

3. **Special considerations for pregnant workers**

- a. A pregnant radiation worker may voluntarily declare her pregnancy but is not required to do so. The declaration automatically reduces the regulatory limit for the woman to 500 mrem for the entire nine months with a recommended limit of 50 mrem per month. Any “declared” pregnant worker likely to receive greater than 100 mrem in the nine months must use a personal dosimeter. The form “Pregnancy Declaration” may be obtained from the RSO or at the Laboratory Safety Division website. It is to be completed and returned to the RSO to initiate the necessary actions.
- b. Should a radiation worker choose not to declare her pregnancy, the regulatory limit for an undeclared worker stays at the same level as any radiation worker: 5 rem (5000 millirem) per year. A radiation worker can rescind a pregnancy notification in writing at any point for any reason without explaining the reason.

#### **4. Special considerations for handheld X-ray device users**

- a. Users of any handheld or portable x-ray device will be required to wear a dosimeter for at least one year.
- b. Upon the completion of the first year, the individual dose records will be reviewed. If it is found that no dose is received in excess of 10% of the annual limit then in accordance with [Texas Administrative code 289.231](#), the user will be removed from the dosimetry program.

### **DOSE LIMITS FOR INDIVIDUAL MEMBERS OF THE PUBLIC**

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For consistency with UTSA exposure limits to radioactive material, no member of the general public may be exposed to more than 0.1 rem (100 mrem) in a year and no more than 0.002 rem (2 millirem) in any one hour. Area monitoring may be required to confirm that these limits are being maintained. For medical applications, a special exemption may be requested to allow up to 0.5 rem per year exposure to a member of the general public. This exemption must be approved in advance by the TXDSHS.

### **PERSONNEL DOSIMETER RECORDS**

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The Radiation Safety Office is responsible for the occupational dose records and issuing the individual dosimeters to the various departments. Occupational dose histories are maintained by the RSO.

Any person who has a potential occupational radiation exposure at UTSA and who previously, or currently, has potential occupational exposure through work with another employer should promptly report the other employment to the RSO. This will allow the combination of exposure records to ensure annual and lifetime exposure limits are not exceeded.

### **REQUIREMENTS FOR PERSONNEL**

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All personnel working with or in an area with radiation machines must complete training. **UTSA Safety course “X-ray Safety”** located in the [BioRAFT portal](#) is required for all radiation machine users. Any radiation machines used with human subjects requires additional training and review by the Institutional Review Board (IRB). Contact the RSO for more information.

Radiation machines have specific requirements for operator training and use. In all cases a record of specific training approved by the RSO and/or the R&LSC and a log of users must be kept up to date by lab personnel. This log must be kept near the X-ray machine and updated whenever the machine is used.

## **GUIDELINES FOR PROTECTION**

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The fundamental objective of the use of radiation in research is to obtain optimum information or data with minimum exposure of the personnel concerned and the public.

### **RESTRICTED AREAS**

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All medical radiographic rooms and areas containing control consoles are "restricted" areas. These are areas into which access is controlled by the registrant for purposes of protection of individuals from exposure of radiation. The restriction must be maintained by the operator of the radiation machine within the area.

### **PROTECTIVE DEVICES**

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If required, protective devices such as leaded aprons, gloves, gonadal shields, thyroid shields, or shin shields are to be visually inspected annually by lab personnel for defects such as holes, tears or cracks. A record of the inspection listing the devices, the results and the name and signature of the individual conducting the inspection shall be maintained inside the X-ray folder by the machine. Any device found defective will be removed from service until repaired or discarded. Labels of inspection should be placed on the lead aprons, vests, skirts and gloves. Do not use a lead apron, vest, etc, if a label is not on the device. Remove from service and call Radiation Safety to inspect and label the device. The thickness of the protective device is to be as follows:

1. 0.5 millimeter thickness of lead equivalent material is required for protective devices that will be used to shield for direct beam radiation such as the gonadal shield and when using fluoroscopic units in sterile fields.
2. 0.25 millimeter thickness of lead equivalent material is required for protective devices that will be used to protect for primary (once-scattered) scatter radiation.

### **EXPOSURE OF INDIVIDUAL STAFF**

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Reduction of radiation exposure to an individual from external sources of radiation may be achieved by any one or any combination of the following measures:

1. Increasing the distance of the individual from the source.
2. Reducing the duration of exposure.
3. Using protective barriers between the individual and the source.

Shielding and distance are the factors most readily controlled. Protective shielding includes those incorporated into the equipment, mobile or temporary devices, such as moveable screens, or lead impregnated aprons and gloves; or permanent protective barriers and structural shielding, such as walls containing lead or concrete.

The radiation exposure controls for individual radiation machines, such as interlocks, will be used unless a waiver has been obtained from the R&LSC. Radiation machines without exposure controls must be operated under a protocol which includes radiation control measures that have been approved of by the RSO and the R&LSC.

## **EXPOSURE OF HUMAN SUBJECTS**

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Individuals (human subjects) shall not be exposed to the useful beam except for healing arts purposes unless such exposure has been authorized by a licensed practitioner of the healing arts. This provision specifically prohibits deliberate exposure for the following purposes:

1. Exposure of an individual for training, demonstration, or other non-healing arts purposes.
2. Exposure of an individual for the purpose of healing arts screening except as authorized by the TXDSHS to the institution for a specific procedure requested.
3. Exposure of an individual (subject) for medical research except research protocols that have been reviewed and approved by the IRB and the R&LSC.

## **RADIATION EXPOSURE INCIDENTS**

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Radiation overexposures or possible incidents involving human subjects are to be reported to your supervisor immediately, who will contact the RSO (210-458-5807) and the Occupational Health & WCI Coordinator (210-458-4038).

## **POSTING NOTICES, INSTRUCTIONS, REPORTS TO WORKERS, AND POSTING A RADIATION AREA**

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1. Read the "[Notice to Employees](#)" sign posted in the work area.
2. Read this plan on operating and safety procedures and operating procedures specific to your machine.
3. The Certificate of Registration for UTSA and any notices of violations involving radiological working conditions are available from the **Lab Safety Office** and are posted in **GSR 2.104V**.
4. Your rights and obligations as a radiation worker are found in "Notice to Employees" regulations. The rooms in which permanent open beam radiation machines are located and operated must have this signage.

# APPENDIX A – PREGNANCY DECLARATION

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## DECLARATION OF PREGNANCY FORM

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### SECTION I – VOLUNTARY DECLARATION OF PREGNANCY

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In accordance with the Texas regulations for Radiation Control in 25 TAC§289.202(m)<sup>1</sup> "*Dose equivalent to an embryo/fetus*" I voluntarily declare that I am pregnant. My estimated date of conception is \_\_\_\_\_ as regulation requires.

I understand that the dose equivalent to my embryo/fetus during my entire pregnancy will not be allowed to exceed 0.5rem (5mSv) *unless this limit has already been exceeded between the time of conception and the date of declaration as stated*. By certifying this document, I understand that I have met the definition of a declared pregnant person.

\_\_\_\_\_  
Signature and Date

\_\_\_\_\_  
abc123

### SECTION II – RESCINDING DECLARATION OF PREGNANCY

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The pregnant worker may undeclare the above declaration in writing at any time without explanation and the dose monitoring will be discontinued and the applicable radiation worker occupational dose limits will apply.

I, \_\_\_\_\_ declare that I no longer wish to be considered a declared pregnant person.

\_\_\_\_\_  
Signature and Date

\_\_\_\_\_  
abc123

<sup>1</sup> 25TAC§289.202 © (7) Declared pregnant woman--A woman who has voluntarily informed the licensee, in writing, of her pregnancy and the estimated date of conception. The declaration remains in effect until the declared pregnant woman voluntarily withdraws the declaration in writing or is no longer pregnant.