Radiation Safety Policy

I. Purpose

Federal and State of Michigan rules and regulations require Western Michigan University (WMU) to assure that exposure to radiation is ALARA (As Low As Reasonably Achievable). The Radiation Safety Policy sets forth the means by which the University complies with applicable rules and regulations. The Radiation Safety Policy further stipulates the duties and responsibilities for the development, implementation, and oversight to ensure the safe use of radiation.

This policy applies to all personnel in facilities or on property owned or controlled by WMU and utilizing radioactive materials or radiation producing devices.

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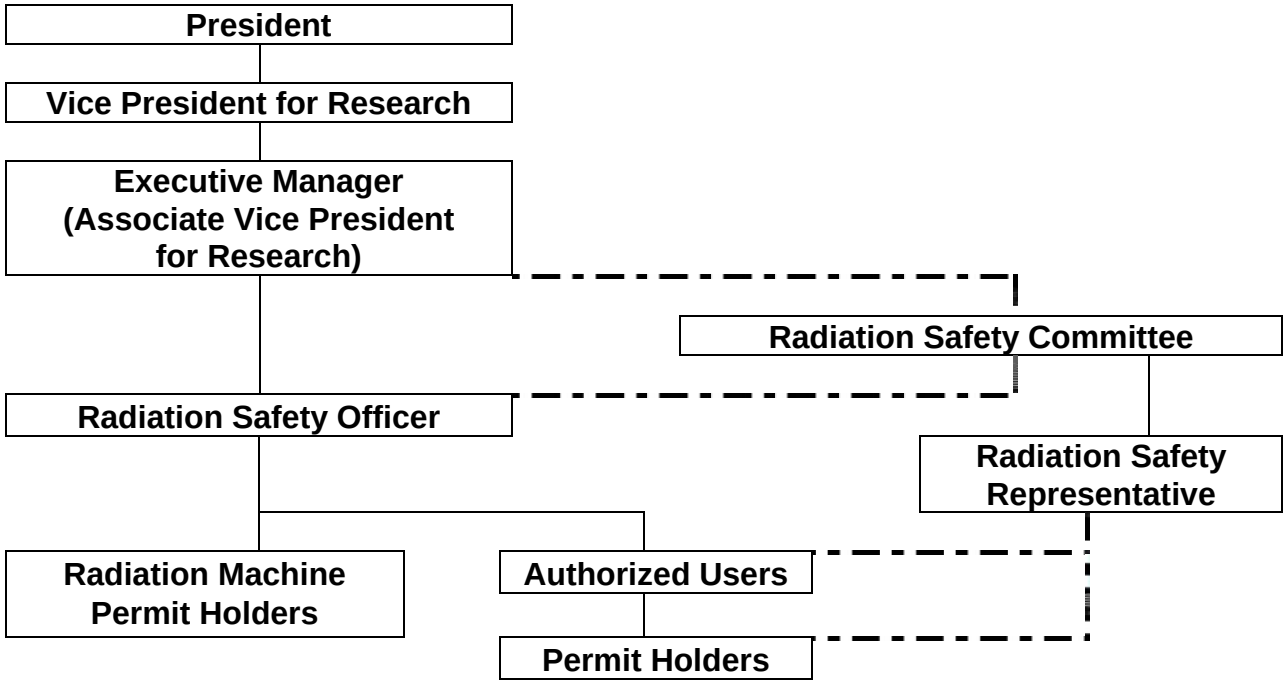
II. Executive Management and Delegation of Authority

The United States Code of Federal Regulations (CFR) and Public Acts of the State of Michigan require that WMU establish and enforce a written policy to govern activities using radioactive materials and/or radiation producing devices. The Office of the Vice President for Research (OVPR) administers the Radiation Safety Policy.

Duties and Responsibilities shall include, but are not limited to, the following:

1. ***Be available to facilitate effective and immediate action without having to consult with higher authority in an emergency.***
2. ***Participate in the Quality Control Program.***
3. ***Appoint the Radiation Safety Committee (RSC) Chair and RSC members.***
4. ***Support the Radiation Safety Officer (RSO) and RSC.***
5. ***Attend the Radiation Safety Committee meetings.***

The organizational chart below represents the relationship of the parties responsible for the control of radiation and radioactive materials.



The President, Vice President for Research, and Associate Vice President for Research comprise WMU's Executive Management Team. ***The Executive Manager*** has been given the authority and means to make prompt decisions without having to consult with higher management, particularly in case of an emergency concerning radiation. This authority includes permission to take whatever actions are necessary to ensure all radiation safety practices comply with the rules and regulations governing the use of radioactive material or radiation producing machines.

III. Sanctions for Non-Compliance

The Nuclear Regulatory Commission (NRC) has issued Western Michigan University a Radioactive Materials License. Any one individual or action can jeopardize the ability to keep that license. Loss of the WMU Materials License endangers the ability to teach and conduct research requiring the use of radioactive material and/or radiation producing devices. If, for any reason, the license is suspended or terminated no one will be able to use radioactive materials or radiation machines of any kind until the license is reinstated. Therefore, this license places significant responsibility on each individual using radioactive material or radiation producing machines. Every individual is responsible not only to maintain compliance with all rules, regulations, procedures, and policies that govern the use of radioactive material and radiation producing machines, but to promote a safe working environment through their radiation and contamination control practices.

All persons involved in the use of radioactive material and radiation-producing devices may be subjected to inspections by the Nuclear Regulatory Commission (NRC), the State of Michigan, and WMU staff to assure compliance with all relevant rules and regulations. Failure of an individual to conduct their program within the rules, regulations, procedures, and policies made in our license application, subsequent amendments, or correspondence can result in enforcement action, against WMU and/or the individual. This could include a notice of violation, imposition of a civil penalty, or an order suspending, modifying, or revoking the WMU license as specified in the General Statement of Policy and Procedure for NRC Enforcement Actions.

Serious consequences, to employees and the public, can result from a failure to comply with the requirements. Therefore, WMU management must take prompt and decisive action when dealing with individuals who do not achieve the meticulous attention to detail and high standard of compliance expected of them.

In the event an individual fails to comply with the rules, regulations, procedures, and policies that govern the use of radioactive material and radiation producing machines, the Radiation Safety Officer will take the recourse deemed necessary. The RSO will base recourse on the severity of the individual's inappropriate action. The RSO will document violations and deviations of the rules, regulations, procedures, and policies that govern the use of radioactive material and radiation producing machines. The RSO shall also determine and document the actions, if any, necessary to prevent recurrence.

An individual that has been sanctioned may request a review by the Radiation Safety Committee. Requests shall be made to the RSC through the Chair.

Sanctions that may be given by the RSO in the order of severity, least to most.

A. Meeting with the RSO, the Authorized User (AU), and the individual; may also include the Executive Manager.
B. Require retraining of the individual.
C. Restrict use of radioactive materials and/or radiation producing devices.
D. Terminate the privilege to use radioactive material or radiation producing devices.

IV. Duties of those Responsible for the Radiation Safety Program.

A. Radiation Safety Officer

The Radiation Safety Officer (**RSO**) reports to the Associate Vice President for Research and is responsible for the development, maintenance, and enforcement of the WMU Radiation Safety Program. The RSO shall have access to all buildings and research where radioactive material or radiation producing devices are used or stored. The RSO has the authority to alter, modify, suspend, or terminate any use of licensed or registered material that in his judgement is a threat to health, safety, environment, or a violation of any rules, regulations, or conditions of the license or registrations that govern our use of such material.

NOTE:	**Responsibility for these duties may not be transferred to other individuals. Tasks and duties may be assigned or delegated; however, the responsibility for these tasks and duties is with the RSO.**

Duties and Responsibilities shall include, but are not limited to, the following:

1. ***Ensure compliance with the rules, regulations, and procedures governing radiation and its use.***
2. ***Serve as a liaison between WMU and all regulatory agencies on matters pertaining to radiation.***
3. ***Direct the Quality Control Program.***
   a. ***Compile the results of the subprogram audits for an overall assessment of the entire RP Program (Annual Audit).***
4. ***Direct the Radiological Control Program.***
5. ***Direct the Administrative Controls Program, including:***
   a. ***Review and approve proposed uses, users, and rooms.***
   b. ***Maintain all documentation required by the Radiation Safety Program.***
6. ***Develop and implement the Radiation Safety Training Program.***
7. ***Direct the Source Inventory and Control Program.***
8. ***Direct the Instrumentation and Dosimetry Program.***
9. ***Direct the Radioactive Waste Program.***
10. ***Direct the Transportation of Radioactive Material/Waste Program.***
11. ***Direct and/or conduct the phases of corrective actions to prevent recurrence of incidents involving radiation or radioactive material.***

a. Investigate all identified conditions adverse to quality.
b. Determine the causes of each incident.
c. Develop corrective actions to prevent recurrence.
d. Implement the prescribed actions.

12. Supervise and assign duties to the Radiation Safety Coordinator and other relevant personnel.
13. Approve temporary Radiation Safety Representatives (RSR) when notified that the RSR will be absent for greater than two (2) weeks.
14. Update and distribute the Emergency Plan information.
15. Notify the Nuclear Regulatory Commission, Radiation Safety Committee, State Regulators, and the Executive Management team 30 days prior to termination of employment.

B. Radiation Safety Committee

NOTE:	**The Radiation Safety Committee (RSC) is not a required function of our license. However, WMU feels the RSC will provide valuable assistance in ensuring compliance with the rules and regulations governing the use of radiation or radioactive materials.**

The Radiation Safety Committee (**RSC**) will provide guidance and assistance to the Executive Manager and the RSO in the development and implementation of policies and procedures used to ensure compliance with the rules and regulations governing radiation and radioactive material use.

The composition of the committee shall be as follows**:**

***** 1. Radiation Safety Committee Chair
***** 2. Executive Manager
3. Radiation Safety Officer (ex officio)
4. Radiation Safety Coordinator (ex officio) shall also serve as the recording secretary for all Radiation Safety Committee meetings.
****4*** 5. Appointed members from the College of Arts and Sciences, College of Health and Human Services, College of Engineering and Applied Sciences, Environmental, Health and Safety, Physical Plant, and Sindecuse Health Center
6. An appointed member from the community that is not affiliated with the University.

**** Indicates the members or a representative needed to establish a quorum and conduct official business***
****4 Indicates that four members are needed to establish a quorum and conduct official business.***

Appointments to the Committee

Members of the committee shall be nominated by their respective departments and appointed by the Executive Manager for a period of three years. Term appointments should be made such that a third of the membership is renewed annually. Each

appointment will correspond with the fiscal year (July 1 through June 30). For subsequent terms, they may be re-appointed by the Executive Manager with support by a majority vote of the other RSC committee members.

In addition, the Executive Manager shall appoint a Chair from the RSC membership. The Chair's appointment shall be for a three year period. The Chair must have a minimum of two years experience on the committee or a similar committee.

Regular Meetings

The RSC shall meet as necessary. All members are required to attend each meeting.

The majority vote shall direct the action.

Recourse for failure to carry out duties and responsibilities.

If any member of the committee that does not fulfill his/her obligations may be removed from the committee by majority vote of the other members. It will then be the responsibility of the Executive Manager to appoint a replacement from the relevant department's nominations.

Duties and Responsibilities shall include, but are not limited to, the following:

1. Provide oversight in conjunction with the RSO and Executive Manager through participation in the Quality Control Program.
2. Review and provide feedback on imposed sanctions.
3. Provide input into the development or enhancement of procedures and policies governing the use of radioactive material and radiation producing machines.
4. Disseminate information associated with the use of radioactive material or radiation producing devices such as changes in rules, regulations, procedures, or policies that govern the use of radioactive material or radiation producing machines.

Radiation Safety Committee Chair:

Duties and Responsibilities shall include, but are not limited to, the following:

1. Participate in the Quality Control Program.
2. Possess signature authority for RSC business.
3. Provide all special subcommittees their charter and grant them the authority to conduct business.
4. Establish and distribute the agenda for the meetings.

Radiation Safety Representative (RSR)/Appointed RSC Members:

Duties and Responsibilities shall include, but are not limited to, the following:

1. Participate in the Quality Control Program.
2. Assist the RSO in maintaining compliance with the rules, regulations, and procedures governing radiation and its use.
3. Assist their Department's Authorized Users and Permit Holders in maintaining compliance with the rules, regulations, and procedures governing radiation and

its use.

4. Disseminate information associated with the use of radioactive material or radiation producing devices such as changes in rules, regulations, procedures, or policies that govern the use of radioactive material or radiation producing machines.
5. Ensure radiation producing devises are calibrated in accordance with the manufacturers' guidelines or instructions.
6. Recommend to the RSO a temporary replacement for periods of absences greater than two (2) weeks.

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C. Authorized Users

Authorized Users (AU) are approved by the Radiation Safety Officer after verification of the individuals training and experience. The RSO will maintain a current listing of all active and inactive AUs.

Authorized Users are responsible for their compliance with all rules, regulations, procedures, and policies that govern the use of radioactive material and radiation producing machines. AUs also carry supervisory roles for permit holders assigned to them and are responsible for compliance by their permit holders.

Duties and Responsibilities shall include, but are not limited to, the following:

1. Participate in the Quality Control Program.
2. Notify the RSO of any violations or deviations from the rules, regulations, procedures, ALARA practices, or unusual events involving the use of radioactive material or exposure.
3. Assist the RSO in investigating, determining the cause of, developing corrective action, and implementing actions to prevent recurrence of incidents involving radiation.
4. Ensure that individuals working under their direct supervision are properly supervised and trained to maintain ALARA and compliance with all rules, regulations, procedures, and policies that govern the use of radioactive material and radiation producing machines.
5. Maintain an awareness of the regulations and requirements pertaining to the use of radioactive materials. Inform the RSO of any items that may be of interest to provide a safe working environment.
6. Practice and promote ALARA (As Low As Reasonably Achievable) principles and standards.
7. Adhere to the requirements of the Radiation Safety Program procedures.
8. Participate in the Training Program.
9. Maintain an inventory of radioactive material and waste located in the areas/rooms for which they are responsible.
10. Adhere to the documentation requirements of the procedures and policies.
11. Review the working conditions for ALARA considerations with an individual when informed the individual is or may be pregnant. Inform the RSO.
12. Inform the RSO prior to absences of > two (2) weeks.

13. Inform the RSO of any personnel changes under their supervision.

D. Permit Holders

Permit Holders are the individual users. They are the direct handlers of radioactive material and radiation producing devices. Therefore, the primary responsibility for compliance for safety and the rules and regulations lies with them. For this reason, it is critical that they be aware of the risks, safe practices, and requirements for use of radioactive material and radiation producing devices.

Duties and Responsibilities shall include, but are not limited to, the following:

1. Notify their AU and/or the RSO of any violations or deviations from the rules, regulations, procedures, ALARA practices, or unusual events involving the use of radioactive material or exposure.
2. Adhere to the documentation requirements of the procedures and policies.
3. Participate in the Training Program.
4. Practice and promote ALARA (As Low As Reasonably Achievable) principles and standards.
5. Obtain and wear assigned dosimetry during the use of radioactive material or radiation producing devices.
6. Maintain an awareness of the regulations and requirements pertaining to the use of radioactive materials. Inform the RSO of any items that may be of interest to provide a safe working environment.
7. Wear appropriate personal protective equipment according to the type of radioactive material and radiation producing device being used.
8. Inform supervisor of any medical condition, including pregnancy that may preclude or alter the individual ability to work with or be in proximity to radioactive material and radiation producing devices.

E. Division of Environmental, Health, and Safety (EHS)

Division of Environmental, Health, and Safety shall assist the RSO to ensure the safe use and transport of radioactive material and radiation producing machines at or on the property owned and controlled by WMU.

Duties and Responsibilities shall include, but are not limited to, the following:

1. Assist the RSO and/or Public Safety Officers in the recovery from an emergency involving a loss of control of radiation or radioactive material.
2. Assist the RSO in preparing radioactive material/waste shipments.
3. Provide a 24-hour per day emergency contact as required during transport of radioactive material/waste over public highways.

Appendix A
Programs that Comprise the Radiation Safety Program

A. Training

Radiation Safety Training will consist of three different courses; Basic Radiation Safety, Authorized User, and Annual Refresher training. The basic course may vary as to the potential hazards associated with the attendee's expected use, i.e. radiation producing machine users will not receive in-depth contamination control training. The training course for Authorized Users will build on the Basic Radiation Safety Training Course. Since Authorized Users are responsible for supervising both student and faculty Permit Holders, the training they will receive will delve further into both radiation theory and proper radiological practices.

Personnel shall satisfactorily complete a Radiation Safety training course prior to using radioactive material or radiation producing machines. In order to continue to use radioactive material or radiation producing machines, all Authorized Users and Permit Holders will be required to satisfactorily complete an Annual Refresher training course.

B. Radiological Controls Program

The Radiological Controls Program consists of procedures and practices used to maintain exposure to the general public, and the students, staff, and faculty of WMU ALARA. The procedures contain control limits for occupational exposure and contamination levels, radiation and contamination survey requirements, criteria and instruction on releasing areas and equipment for unrestricted use, decontamination methods, anti-contamination clothing requirements, operating instructions for the radiation producing machines and ALARA practices.

C. Quality Control Program

The Quality Control Program consists of the procedures and practices used to ensure that the procedures and practices used at WMU are of the highest standards. The Quality Control Program consists of procedures for conducting internal audits and surveillances. The program also provides requirements for reporting, investigating, and correcting of incidents adverse to quality relating to the control and use of radioactive material or radiation producing machines.

D. Source Inventory and Control Program

The Source Inventory and Control Program consists of the procedures and practices used to ensure compliance with the quantity and type of material specified by our operating license. The procedures contain the steps and responsibilities for ordering, receiving, and inspecting radioactive material, the requirements and methods for the safe handling of radioactive sources, and frequency for conducting material inventories.

E. Instrumentation and Dosimetry Program

The Instrumentation and Dosimetry Program consists of the procedures and practices used to obtain accurate exposure measurements. The program also requires the assessment of exposure. The Instrumentation portion of the program delineates the requirements for use and calibration of all instruments used to perform dose estimates and surveys.

F. Radioactive Waste Program

The Radioactive Waste Program consists of the procedures used to minimize, control, store, and dispose of radioactive waste being generated at WMU. The procedure provides the choices available for the disposal of radioactive waste.

G. Transportation of Radioactive Material/Waste Program

The Transportation of Radioactive Material/Waste Program consists of the procedures used to ensure compliance with the rules and regulations governing the conveyance of material over public roadways. The shipping of radioactive material/waste is an infrequently performed task. The procedure refers the RSO and shipper to the appropriate rules and regulations. Transporting the CPN Hydroprobe and Troxler Roof Moisture gauges is frequently performed in the spring and summer months. Specific guidance for these instruments is provided.

H. Administrative Controls Program

The Administrative Controls Program consists of the procedures that specify the requirements for record and documentation management, the criteria for becoming an Authorized User, approving uses and facilities, and instructions for writing and distributing procedures. Administrative Controls are used to ensure that WMU complies with the rules and regulations governing the use of radioactive material and radiation producing machines.

I. Emergency Plan

The Radiological Controls Program consists of procedures and practices used to maintain exposure to the general public, and the students, staff, and faculty of WMU ALARA due to an emergency. The plan includes an emergency call out list, the events that would require notification of state and federal agencies, and procedures that contain immediate actions and basic supplemental actions for the first permit holder responding or discovering a radiological incident.