

APPENDIX C - RADIATION PRODUCING MACHINES WORK PERMIT

If an Authorized User (AU) wishes to use a radiation producing machine, then he/she must have an approved Radiation Producing Machine Work Permit (RWP).

The RWP, and its supporting documents (found in this Appendix) shall be completed by the Primary Authorized User and submitted to the RSO for review. If the RWP is approved by the RSO, then the AU shall be allowed to use the radiation producing machine under the conditions of the RWP, the WKU Radiation Producing Machines Safety Manual, and 902 KAR 100.

If the AU needs to make a change to the RWP after it has been approved, then the AU must submit an amendment request, or an entirely new RWP (depending on the amount of change required), the amended RWP will undergo the same process as described in the previous paragraph.

The RSO and RSC reserve the right to request updated information from an AU regarding their work with radiation producing machines as they deem appropriate.

RADIATION PRODUCING MACHINES WORK PERMIT

This form is to be completed and approved prior to any work performed with the radiation producing machine.

PRIMARY RESPONSIBLE INVESTIGATOR INFORMATION

Name: _____	
Department: _____	Telephone: _____
Building: _____	Fax: _____
Room: _____	E-mail: _____

ADDITIONAL RESPONSIBLE INVESTIGATORS

Name	Department	Telephone	E-mail

RADIATION PRODUCING MACHINE INFORMATION

Vendor: _____
Control Panel Manufacturer, Model & Serial No.: _____
Tube Housing Manufacturer, Model & Serial No.: _____
Proposed Use: <input type="checkbox"/> Research <input type="checkbox"/> Industrial <input type="checkbox"/> Human Use: Diagnostic <input type="checkbox"/> Other (specify): _____
Type of Machine: <input type="checkbox"/> Radiographic <input type="checkbox"/> Dental <input type="checkbox"/> XRF <input type="checkbox"/> XRD <input type="checkbox"/> Neutron Generator <input type="checkbox"/> Accelerator <input type="checkbox"/> Other (specify): _____
Additional Description of Machine: _____
Maximum kVP (if applicable): _____
Maximum mA (if applicable): _____
Maximum MeV (if applicable): _____
<input type="checkbox"/> Fixed <input type="checkbox"/> Mobile <input type="checkbox"/> Portable
Proposed Use Location Facility Name, Street Address, Building, Room # (Attach a copy of a scale building floor plan indicating the location and adjacent areas):
Date of Proposed Initial Operation: _____

Please answer the following questions (use attachments, where requested, and if additional space is required).

GENERAL INFORMATION

1. Explain briefly the intended use of the radiation producing machine.

2. Will this machine be used by Supervised Users? Yes No
If yes, please list their names and indicate how you intend to ensure that they receive adequate supervision. Any time a person is added to or removed from this list, submit the change in writing to the RSO (e-mail notification is sufficient).

3. Are you familiar with the provisions and regulations of the following:

Standards for Protection Against Radiation, 902 KAR 100:019? Yes No
WKU Radiation Producing Machines Safety Manual? Yes No

If you answered “No” to either question, contact the RSO to discuss these items.

4. If there is (or shall be) possession of survey and monitoring equipment, complete the Survey and Monitoring Equipment Form. Itemize specific items owned and/or those which you plan to obtain if this application is approved.

 There is (or shall be) survey/monitoring equipment; information concerning the survey equipment is listed below. Include any additional information that is important regarding survey/monitoring equipment.

 Survey/monitoring equipment is not required.

5. Describe arrangements that have been made with the Radiation Safety Officer with respect to personnel monitoring requirements.

 There is (or shall be) personnel monitoring; information concerning the personnel monitoring is listed below. Include any additional information that is important regarding personnel monitoring.

 Personnel monitoring is not needed (state why).

RADIATION PRODUCING MACHINES – GENERAL

6. Attach plans and specifications (shielding, etc.) for the proposed facility. Include documentation of the evaluation of these plans by a qualified expert approved by the Cabinet. (A listing of approved radiation consultants is available through the RSO.)
Attached? Yes No

7. Describe the training that has been or will be provided with regards to radiation safety and operation of the machine.

GENERAL X-RAY (DENTAL, DIAGNOSTIC, ANALYTICAL)

8. Attach a copy of written safety procedures and rules for the particular x-ray system. These shall be posted in a conspicuous place beside each x-ray system's control panel.
Attached? Yes No

9. Describe any protective clothing (e.g., lead aprons) that will be used. If protective clothing is not needed, state this.

ANALYTICAL X-RAY EQUIPMENT (XRD, XRF, ETC.)

10. Attach a copy of the normal operating procedures that will be made available to analytical x-ray equipment workers.
Attached? Yes No

11. Is there a label reading "CAUTION - RADIATION - THIS EQUIPMENT PRODUCES RADIATION WHEN ENERGIZED" near the tube power switch? Yes No

12. Is there a sign stating "CAUTION - HIGH INTENSITY X-RAY BEAM" adjacent to the tube housing? Yes No

13. Attach a copy of your beam alignment procedures. Attached? Yes No
Specify the individual(s) below that will perform beam alignments.

14. Describe how you will prevent access to the beam by unauthorized individuals.

15. List any non-radiation hazards that need to be addressed (e.g. high voltage, chemicals, cryogenic liquids, gases)?

DENTAL X-RAY

16. Attach a copy of the technique chart that will be used and posted at the dental x-ray control panel.
Attached? Yes No
17. Is the source to skin distance (SSD) \geq 18 cm when the unit is operated >50 kVp?
Yes No
18. Is the source to skin distance (SSD) \geq 10 cm when the unit is operated <50 kVp?
Yes No
19. Describe radiation safety training provided faculty, staff, and/or students prior to their use of WKU dental x-ray equipment.

DIAGNOSTIC X-RAY

20. Does the control panel have the following or equivalent statement near the power switch?
"WARNING: This x-ray unit may be dangerous to patient and operator unless safe exposure factors and operating instructions are observed."
Yes No
21. Attach a copy of the technique chart that will be used and posted at the control panel.
Attached? Yes No
22. What are the procedures for selecting a person to hold a patient or film and the procedures the holder will follow? What protection will the human holder be provided?

PARTICLE ACCELERATORS (VAN DE GRAAFF, ETC.)

23. Are switches that energize portions of the accelerator labeled "CAUTION - RADIATION - THIS MACHINE PRODUCES RADIATION WHEN ENERGIZED"?
Yes No
24. Attach a copy of beam alignment procedures.
Attached? Yes No
25. Is there a warning light next to switches on the control panel that cause radiation production?
Yes No
Will the warning light remain lit only when the control circuit is energized?
Yes No
26. Will a red or magenta warning light (flashing or rotating) be placed in the high radiation area and at the entrance to the high radiation area?
Yes No

27. Describe the safety interlock that will be installed at the entrance to the high radiation area. Be sure to include description of an emergency cutoff in the high radiation area. Ensure that the interlocks are fail safe or redundant (be sure to keep on file a circuit diagram of the accelerator and corresponding interlock systems).
28. Indicate the model and serial number of the area radiation monitor to be installed in the high radiation area and the remote readout to be placed at the control panel.
29. Attach a copy of written operating procedures that pertain to radiation safety.
Attached? Yes No
30. Attach a copy of written emergency procedures for accidents involving radiation exposure. Include instructions to notify the RSO and to arrange for a medical exam in case of accidental radiation exposure.
Attached? Yes No
31. Describe how the accelerator will be secured when not in operation to prevent unauthorized use.
32. Will any radioisotopes be used a part of the operation of this accelerator (e.g., as a source gas)?
Yes No
If yes, please describe:
33. Are accelerator components expected to be activated?
Yes No
If yes, describe your procedures for controlling movement of activated items from the accelerator location. How will you ensure that items removed from the accelerator location are not activated?
34. What particles are to be accelerated?
35. What radiation types will result from the accelerator operation?
36. What type, if any, surface radioactive contamination is expected to result from the operation of the accelerator?
37. Describe your procedure for handling targets (especially thin targets) and your methods for determining whether they have been activated. If a target is activated, how will you label/store/dispose of said target?



38. Provide information about potential hazards that are non-radiological in nature (chemical, electrical, fire, air effluents)

39. Please provide any other information that might be helpful to the Radiation Safety Officer and the Radiation Safety Committee.

CERTIFICATION: I certify that the work performed with the radiation producing machine(s) requested in this application will be done in accordance with the rules and regulations contained in 902 KAR 100, Western Kentucky University's Radiation Producing Machines Safety Manual, and in accordance with procedures specified in this application.

Primary Responsible Investigator Signature

Date

Approved by

Date

(Radiation Safety Officer)