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| **RS 3400 Irradiator Maintenance** | | | | | | |
| **Purpose** | To ensure the irradiation using the RS 3400 irradiator meets expected criteria and that the instrument is maintained in an operation state, according to manufacturer’s instructions | | | | | |
| **Policy Statements** | * A radiation survey is conducted to provide assurance that radiation emitted from the cabinet x-ray system shall not exceed and exposure of 0.2 millirroentgens in one hour at any point five centimeter outside the external surface. | | | | | |
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| **Materials** | **Equipment** | | | | **Supplies** | |
| Radiation Survey Meter | | | | Soft cloth with mild soap | |
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| **Procedure** |  | | | | | |
|  | **Step** | Action | | | | |
| Monthly | 1 | Clean the outside of the irradiator and the canisters.  **NOTES:**   * Do not allow cleaners or water to drip into panels or chamber. * Only use a damp cloth with mild soaps. | | | | |
|  | 2 | Inspect the door interlock mechanism.   * Verify that the interlock tongue attached to the chamber door has no obvious faults such as cracks or missing hardware. * Verify that the interlock tongue inserts into the door interlock freely and properly. | | | | |
|  | 3 | Inspect the power cord. Verify the cord is not frayed and the insulation is not cut. | | | | |
|  | 4 | Document monthly maintenance on TSf 17.10.2 QC and Maintenance of Blood Bank Equipment | | | | |
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|  | **Step** | Action | | | | |
| Semiannually | 1 | Timer Check:   * Run the irradiator for the set cycle time * Record results on the TSf 17.21.1.1 RS 3400 Timer Verification * Acceptable results 2 seconds | | | | |
|  | 2 | Dosimetry:   * Follow instructions provided from vendor. * Return package to vendor as stated in the instruction. The vendor will process the dosimeters and results will be mailed within 7-10 days. * Reports will be reviewed by the TS Tech Specialist * Pace does mapping report in RS 3400 QC Notebook   Acceptable range: a minimum of 1500 Rads in any region.   |  |  | | --- | --- | | **If** | **Then** | | The does is <1500 Rads in any region | * Suspend Operations * Refer to TS 17.26 backup procedure * Contact RadSource |   **NOTE:** Dosimetry will be performed every 6 months. A package containing blood phantoms with instructions on running them through a cycle will be sent. | | | | |
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| Annual Radiation Survey | **Step** | **Action** | | | | |
|  | 1 | Start the irradiation cycle.  **Note**: The chamber should be empty. | | | | |
|  | 2 | Position the radiation survey meter so that the detector area faces the surface of the machine and the readout is visible. | | | | |
|  | 3 | Move the radiation detector approximately 2 inches from the surface of the machine. | | | | |
|  | 4 | Move the detector from left to right, then move the detector down approximately 2 inches and slowly sweep from right to left again using a slow sweeping motion. Continue the sweeping motions until the upper half of the machine has been surveyed. Repeat steps 3 and 4 on the rear, left and right of the machine.  **NOTE:** Since the x-ray source inside the chamber is at the center of the chamber, it is necessary to carefully survey the complete outline of the door and the entire door itself | | | | |
|  | 5 | While performing the above stops note the highest reading observed on form TSf 17.21.1.2 RS 3400 Irradiator Radiation Survey   |  |  |  | | --- | --- | --- | | **If** | | **Then** | | All reading observed are below the maximum allowed | The survey is passed and “Yes” must be circled in the table next “Survey Passed?”. | | | While performing the survey any reading exceeds the cabinet emissions requirement | Immediately stop the machine by pressing the E-Sop button, document the results and notify technical specialist | | | | | | |
|  | 6 | Document yearly maintenance on TSf 17.10.2 QC and Maintenance of Blood Bank Equipment | | | | |
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|  | **Step** | **Action** | | | | |
| Performed by Qualified Service Technicians only | 1 | Inspect and service the following annually during the scheduled preventative maintenance (PM):   * Coolant level * Canister holder mounts and bearings * Water connections * HV cable * Safety ground check * Chamber door hinge | | | | |
|  | 2 | Replace the following items biannually during the scheduled PM:   * Dose sensor * Rotator motor * Door interlock switch * Flow and temp sensor | | | | |
|  | 3 | Replace the following items every 3 years during the scheduled PM:   * Timer display * HV cable * Vacuum power supply replacement * Water pump * Door magnet and control assembly * Key switch * Incandescent display light bulbs | | | | |
|  | 4 | Inspect and service the following every 4 years during the scheduled PM:  X-ray source | | | | |
|  | 5 | Replace the following items every 5 years during the scheduled PM:   * Access door sensor * Control PCB * Dose Monitor PCB * Mains Relay * Solid stat relay for generator power | | | | |
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| **References** | 1. RS 3400 Operator’s Manual, Revision: 7, Rad Source Technologies, Inc. | | | | | |
| **Approval**  **Workflow** | Transfusion Service/Lab Director | | | | | |
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| **Historical Record** | **Version** | | **Written/Revised by:** | **Effective Date:** | | **Summary of Revisions** |
| 1 | | S. Cassidy | 03/01/2021 | | Initial Version |