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Subject: Green Alert- Catastrophic Failure of a Questron Q3000 Very High Pressure (VHP) Microwave Oven Vessel

**Title: Catastrophic Failure of a Questron Q3000 Very High Pressure (VHP) Microwave Oven Vessel**

Identifier SR-WSRC-LTA-1999-0039

Information in this lessons learned is preliminary. Additional details will be provided in future updates as the investigation progresses.

**Lesson Learned Statement** The design of equipment should include a complete analysis of the hazards inherent with the equipment's use. Safety devices, designed and installed on potentially hazardous equipment, can significantly reduce the risk of injury.

**Discussion of Activities** On 12/13/99 at 0820 hours a Bioassay Laboratory Supervisor notified the C-041 Control Room that a sealed very high pressure (VHP) Ultem vessel ruptured in a microwave during a resin digestion process. During the process, the interior teflon container was being heated and was under pressure. The outer VHP vessel failed under pressure, and the pressure protection device (rupture disk) located in the inner container did not operate as designed. Pieces of the inner and outer containers and the carousel holder were discharged from the microwave onto the lab floor. The microwave door is designed with a safety device, which allows the door to open only a few inches in case of explosion. This safety device worked properly and the discharged components were only able to escape from the bottom of microwave reducing the risk of injury to workers. There were two employees in the lab at the time of the event. Neither of the employees was injured. The microwave was tagged out of service and the outer Ultem vessels were removed from use.

**Analysis** The entire system including the microwave and vessels, is supplied by a single manufacturer. SRS personnel are working with the vendor to determine the cause(s) for the vessel failure. The unit and vendor information is listed below:

QWave 3000  
Questron Corporation  
4044 Quakerbridge Rd.  
Mercerville, NJ  
08619

Facility managers using similar vessels/crucibles should be notified of this event.

**Recommended Actions** Updates will be provided as to the cause(s) and corrective actions at a later date.

Estimated Savings/Cost Avoidance (if applicable) N/A  
Originator Westinghouse Savannah River Company  
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Authorized derivative Classifier Greg Bell  
Reviewing Official H. S. Etheridge  
Priority Descriptor GREEN/Good Work Practice  
DOE Functional Category To Be Determined  
User-Defined Functional Category To Be Determined  
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