RADCALC SOFTWARE ADVISORY

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Review of Federal Oversight of Software Quality Assurance for RADCALC

On March 16, 2015 the Defense Nuclear Facilities Safety Board (DNFSB) issued a letter identifying deficiencies in the proper oversight, maintenance, and use of RADCALC. RADCALC is a DOE acquired computer program used to perform regulatory transportation calculations based on isotopic content. DNSFB stated that "these deficiencies could result in vulnerabilities in RADCALC's calculation of decay heat, radioactivity, and/or hydrogen gas generation, which could result in serious consequences for workers and the public in the event of a transportation accident." RADCALC Program Management is aware of the issues raised by DNFSB.

The Department of Energy's Office of Packaging and Transportation (EM-33) is taking the following actions to address the concerns raised by DNFSB and to reestablishing a defensible and pedigreed program to ensure confidence within RADCALC community.

- Communication with registered users informing them of known issues.
- Work with RADCALC Site Administrators to verify registered Users at their Site
- Information Technology representatives at DOE Sites will assist in removing legacy versions of RADCALC.
- Issue Test Instructions enabling the End User to verify their installation of RADCALC 4.1.
- Conduct a thorough verification and validation of RADCALC 4.1 to identify any additional issues.
- Document a compliant, pedigreed NQA-1 program.
- Re-release RADCALC 4.1 with pedigreed documentation and processes.

These actions will provide a documented pedigreed program for RADCALC 4.1. RADCALC 4.2 is expected to be released in early July 2015. RADCALC 4.2 will address all known issues and incorporate HM-250 regulatory changes.

Continued use of RADCALC is prudent in the interim based on the following;

1) **Though undocumented - RADCALC was developed under a NQA-1 program**
2) **RADCALC has an extensive history of reliable use.**
3) **Computational deficiencies are well documented and instructions have been promulgated to address them.**
4) **As noted above, work is underway to rapidly re-establish the NQA-1 pedigree documentation and integration of the known problems into RADCALC 4.2.**

Alternatives to the continued use of RADCALC, such as hand calculations or efforts to qualify commercial tools, introduce new risks and may increase risk compared with continued utilization of RADCALC 4.1 during this short interim period.

Need more information?
If you need additional information, please contact any of the following resources;

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