RADCALC SOFTWARE ADVISORY

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Release of RADCALC 4.1.1 and Directions to Users

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. In addition, the pedigree for the qualification of RADCALC 4.1 cannot be verified to meet DOE Order 414.1D, Quality Assurance, requirements. The Department of Energy's Office of Packaging and Transportation (EM-33) has taken the following actions to address these concerns.

- Communicated with registered users informing them of known issues.

- Worked with RADCALC Site Administrators to verify registered Users at their Site.

- Information Technology representatives at DOE Sites have assisted in removing legacy versions of RADCALC.

- Issued Test Instructions enabling the End User to verify their installation of RADCALC 4.1.

- Conducted a thorough verification and validation of RADCALC 4.1 to identify any additional issues.

RADCALC 4.1 does not implement the changes documented in PHMSA-2009-0063 (HM-250) which went into effect on July 13, 2015. In situations where HM-250 changes do not apply, continued use of RADCALC 4.1 may be justified based on the following:

1) RADCALC has an extensive history of reliable use.

2) Computational deficiencies are well documented and instructions have been promulgated to address them.

3) Alternatives to the continued use of RADCALC, such as hand calculations, may increase risk compared with continued utilization of RADCALC 4.1 during the interim until RADCALC Version 4.2 is released.

For users affected by the HM-250 regulatory changes, RADCALC Version 4.1.1, which includes HM-250 regulatory changes, has been developed as commercial software. As such, RADCALC Version 4.1.1 should be treated as otherwise acquired software in accordance with the site specific software quality assurance programs. RADCALC Version 4.1.1 is available at www.radcalc.energy.gov. Alternatively, RADCALC 4.1 supplemented by calculations to implement HM-250 regulatory changes may be used in accordance with the site software quality assurance programs.

EM-33 is sponsoring development of RADCALC Version 4.2 to incorporate the HM-250 regulatory changes governing the classification/shipping of radioactive materials. RADCALC Version 4.2 will be released as qualified software, reestablishing a defensible and pedigreed program to ensure confidence within RADCALC community. EM-33 will provide updates regarding the status of RADCALC Version 4.2 as development proceeds.

To ensure as smooth a transition as possible, BGS will post the user manual and installation instruction on August 4th.

Furthermore, with respect to information requests and reviews for dedication of RADCALC Version 4.1.1, sites are requested to contact askpat@em.doe.gov. OPT will respond to all requests quickly so that there will be little delay in site acceptance of the software.

This safety advisory supersedes and cancels Safety Advisories DOE/OPT/SA-06, DOE/OPT/SA-06 Rev. 1, and DOE/OPT/SA-07.

Need more information?

If you need additional information, please contact:

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