



03/15/19

**RESPONSE TO THE APPARENT VIOLATION IN INSPECTION REPORT 03014021/2018001(DNMS);  
EA-18-157  
NRC LICENSE NUMBER: 21-18673-01  
DOCKET NUMBER: 030-14021**

**VIOLATION A:** Condition 19 of NRC Material License No. 21-18673-01, Amendment 10, states in part, that prior to initial use and after installation, the licensee shall assure that a radiological survey is performed to determine the radiation levels in accessible areas around, above and below the gauge with the shutter open.

Contrary to the above, as of July 12, 2018, on multiple occasions, the licensee failed to assure that a radiological survey was performed to determine radiation levels in accessible areas around, above and below the gauge with the shutter open after routine reinstallation of four Berthold LBL-300-ML source holders containing sealed sources of Co<sup>60</sup> following periods of routine caster maintenance.

**RESPONSE:**

1. Reason for the violation: This was an oversight on the part of the licensee in that surveys are done by the manufacturer's representative at the time of original installation, or after a repair to the gauge assembly.
2. Corrective Steps That Have Been Taken and the Results Achieved: The immediate steps taken were to (a). Make notification of appropriate staff and Management of the violation (b). Enhanced radiation safety training (principles of radiation, radiation safety survey meter use and survey needs, ALARA, and documentation required) was scheduled with Engelhardt & Associates, Inc and Radiometrics.(c) Demonstration of where the survey should be taken on the mold and surrounding areas (d). Two new survey meters were ordered and will be placed in mold repair and/or where directed by the RSO, for use in survey purposes. (e). Continuous area badges have been ordered for use in the area where mold repair operations occur. The results achieved by these steps are: (a) Notifications: All requisite personnel have been made aware of the violation and what steps are being taken to correct it (b). Enhanced Training: This was done over a period of 3 weeks in February; provided enhanced knowledge for employees who work directly with the casters as to what is required, provided a review of radiation safety practices, ALARA + allowed input from employees as to the most effective means to achieve the best fit for ALARA. (c). Discussion of the surveys and how to conduct them provided valuable

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information on the best way to proceed (d). New Survey Meters: These are easier to use than those that were previously available (e). Continuous area badges: These will allow a good assessment of day-to-day doses in the work areas where the casters are being worked on. Please note: When the casters are in use, there is no threat of employee exposures in that access to the units are precluded due to excessive heat.

3. Corrective Steps to Be Taken to Avoid Further Violations: The corrective steps to prevent further violations. (a). Hands on training for each person who works with the casters to demonstrate knowledge of how to remove the shield containing the source and to re-install it when the mold operations are complete. (b). Hands on training on how to conduct the surveys and what records must be kept; a log book will be retained for all surveys, noting who did the survey, date, time and compliance with exposure rates around the mold(c). A larger container has been ordered to store the shield(s) with sources located within, thus, reducing potential for personnel exposures further. (d). The use of Instadose dosimeters in the area where molds are worked on will provide an accurate means of assessing the exposures to workers in the area (e). an updated format has been developed to document reviews of surveys, inventory, shutter checks, signs, postings and condition of the shutters; the RSO will maintain this document
4. Date When Full Compliance Will Be Achieved: There will be some variation on the timing, so each of the above corrective actions are enumerated individually. (i). Notification of staff and management. *This is complete.* (ii). Enhanced training on radiation protection and regulatory requirements + hands on documentation that each required person has been trained on survey procedures with a meter and where surveys should be taken + process for re- installation and removal of shields containing caster sources. *This will be complete by end April 2019.* (iii). Setting up log books, radiation safety task list (ie inventory, shutter checks,etc) and in-house inspection process for task completion. *This will be complete by end April, 2019.* (iv) New container in place *End of April, 2019* (v). Instadose dosimeters in place, new meters on site and training on their use. *This will be complete by end April 2019.*

**Violation B:** Condition 21 of NRC Materials License No 21-18673-01, Amendment 10 states, in part, that the licensee shall assure that the shutter mechanism of each device is locked in the closed position during periods when a portion a portion of an individual's body may be subject to the direct radiation beam.

Contrary to the above, as of July 12, 2018, on multiple occasions, the licensee failed to assure that the shutter mechanism of each device was locked in the closed position when a portion of the individual's body could have been subjected to the direct radiation beam through movement and storage of the devices during removal and installation of four Berthold LB-300-ML source holders containing sealed sources of Co<sup>60</sup> following periods of routine caster maintenance.

**RESPONSE:**

1. Reason for the Violation: This was also an oversight on the part of the licensee, partially due to the small size of the sources in question and the small beam width generated by the sources. In addition, there was a misunderstanding of when surveys were needed or when they needed to be documented.

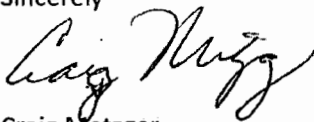
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2. Corrective Steps That Have Been Taken and Results Achieved: As soon as the licensee was made aware of the requirements and the documentation needed, the following was done. (a). Notification of workers and management of the problem (b). Enhanced radiation safety training was scheduled with Engelhardt & Associates, Inc. and Radiometrics (this included a review of basic radiation principles, survey meter use and survey needs, ALARA and documentation required). (c). Review of the survey locations on the mold and documentation of shutter status (d). Steps to using a survey meter and documentation of same, (e). Order 2 new survey meters to be dedicated to caster use (f). Review of the procedure for verification that the shutter closed on the Berthold shield. The results achieved by these steps are as follows: (a). Assured that all requisite personnel were made aware of the violation and what steps are being taken to correct it. (b). Enhanced radiation safety training occurred over a 3 week period in February, 2019; provided a refresher on basics of radiation and radiation protection, ALARA, allowed input from employees as to corrective actions and how best to achieve compliance, thus assuring all requisite employees understand what the problem is and had an active part in deriving a suitable solution. (c). A hands-on shutter opening and closure procedure was done (d). Verification of steps to using a survey meter assures further understanding for employees and, (e). Discussion of the new survey meters that were ordered for caster operations and the ease of use (f). Procedure for verification of the shutter closure + lock out was covered in training
3. Corrective Steps To Be Taken To Avoid Further Violations: The corrective steps to avoid further violations are as follows: (a). Detailed hands on training forms are being developed to assure employees know how to open and close the shutters on the Berthold system + lock out the unit; record retention process will be developed to assure each employee that was trained, fully understood the procedure. (b). There will be hands- on training on the steps to using the new survey meters when they arrive (c). There will be hands-on training on recordkeeping needs for all surveys and shutter open/closure/lock processes.
4. Date When Full Compliance Will Be Achieved: The above all pertain to status of shutters and procedures for assuring shutters are in the closed, locked. *Full compliance will be achieved by the end of April, 2019. Please note, this is a subset of the first violation, in that a survey is a means of determining shutter status, so this response is only directed to shutter operations; the earlier response covers a larger scope.*

If you have any questions or concerns regarding the responses above please feel free to contact me at 734-384-6544 or at [craig.metzger@gerdau.com](mailto:craig.metzger@gerdau.com).

Sincerely



Craig Metzger  
Regional Environmental Manager  
Gerdau Monroe Mill