



# SOLVAY CHEMICALS

INTEROX, FLUORIDES & MINERALS

June 3, 2010

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

**Re: Reply to a Notice of Violation**

Docket No. 030-29284  
License No. 49-19597-02

To whom it may concern:

Pursuant to the provisions of 10 CFR 2.201, Solvay Chemicals, Inc. hereby submits this written reply to a notice of violation. During an NRC inspection completed on April 20, 2010 the inspector identified violations involving failures to: (1) conduct a physical inventory; (2) perform a public dose determination; (3) conduct a radiation survey on an incoming package containing radioactive materials within 3 hours; (4) post areas where radioactive sources are stored; and (5) conspicuous label devices containing radioactive material.

1. 10 CFR 20.1301(a)(1) requires, in part, that licensees shall conduct operations so that the total dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem (1mSv) in a year.

10 CFR 20.1302(b)(1) requires that the licensee shall show compliance with the annual dose limit in 10 CFR 20.1301 by demonstrating by measurement or calculation that the total dose equivalent to the individual likely to receive the highest dose from the licensed operation does not exceed the annual dose limit.

Solvay Chemicals, Inc. failed to demonstrate compliance by measurement or calculation that the total dose equivalent to the individual likely to receive the highest dose from our operation did not exceed the annual dose limit. Solvay Chemicals, Inc. failed to perform a complete dose assessment of the total dose equivalent to individual members of the public on site from the sea land container located on our facility that houses 23 sources containing milli curie quantities of cesium 137 and cobalt 60.

Solvay Chemicals, Inc. performed a member of the public study and identified net cumulative totals (milli rems) for an exposure period. Solvay Chemicals, Inc. demonstrated by measurement and calculation that the total dose equivalent to any individual likely to receive the highest dose did not to exceed the hourly dose limit. However, Solvay Chemicals, Inc failed to provide a calculation to ensure individual members of the public did not exceed the annual dose limit. The direct cause of the violation involved not performing an annual dose calculation to determine individual members of the public did not exceed the annual dose limit. In taking prompt and comprehensive corrective action a survey instrument was used to identify the cause of the elevated dose. With the results of the survey reading we have made provision to surround the

TE07

sea land container with a perimeter chain link fence of 10 feet. This will prevent access from individuals of the public to be exposed to elevated dose limits. The chain link fence is scheduled to be completed by August 15, 2010. There are certain parts and equipment to be purchased as part of this project that will take some time to get it on site. Temporarily, the sea land container has a barricade installed around the perimeter consisting of 10 feet in any direction. This barricading practice is used at Solvay Chemicals, Inc. to prevent unauthorized entry into hazardous areas by individuals of the public. The barricade is also tagged with proper "Do Not Enter" tagging preventing further unauthorized entry into the area. A calibrated survey meter was used at the 10 feet perimeter to detect any radiation levels. The reading of the survey meter at the 10 feet outer perimeter was 0.05 mR/h.

2. License condition 14 of NRC License 49-19597-02, states, in part, that the licensee shall conduct a physical inventory every 6 months to account for all sealed sources and/or devices received and possessed under the license.

Contrary to the above, the licensee did not conduct a physical inventory every 6 months to account for all sealed sources and/or devices received and possessed under the license. Specifically, licensee's last physical inventory was in August 2009 and was due February 2010. Moreover, from February 2010 until the time of the inspection on April 20, 2010, the licensee had not conducted a physical inventory of all sealed sources and/or devices received and in its possession under its license, a period greater than 6 months.

Solvay Chemicals, Inc failed to conduct a physical inventory every 6 months. The direct cause of the violation resulted from a lack of timely scheduling. This is being rectified by moving the inventory schedule up by a couple of days to assure timeliness. In addition, increased oversight by a qualified radiation consultant, from Engelhardt & Associates, Inc. has been put into place. The scheduling and adherence to requirements will be reinforced by the consultant. For the next year, the consultant will visit the site each quarter to assure compliance and to help establish procedural repetition and recognition by the staff. This will assure that this task becomes part of routine for personnel on the site. Date of full compliance has been achieved.

3. 10 CFR 20.1902(e) requires that the licensee post each area or room in which certain amounts of licensed material, specified in CFR 20.1902(e), are used or stored, with conspicuous sign or signs bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL(S)" or "(DANGER, RADIOACTIVE MATERIAL(S))."

Contrary to the above, on April 20, 2010, the Solvay Chemical plant, had multiple areas within the soda ash facility containing between 3 and 50 millicuries of cesium 137 and cobalt 60 per source that were not posted with a conspicuous sign or signs bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL(S), or "DANGER, RADIOACTIVE MATERIAL(S)."

Solvay Chemicals, Inc. failed to provide a durable, clearly visible label bearing the words "CAUTION, RADIOACTIVE MATERIAL(S), or "DANGER, RADIOACTIVE MATERIAL(S)."

The direct cause of the violation resulted from not maintaining our labeling system for our radiation sources. In taking prompt and comprehensive corrective action durable and clearly visible labels (temporary) bearing the words "CAUTION, RADIOACTIVE MATERIAL" were posted at each active source. This action was completed on April 22, 2010. In addition, permanent signs made of Teflon or other durable material have been ordered and will replace the afore mentioned signs as soon as they get to the site. Date of full compliance will be July 10, 2010

4. 10 CFR 20.1904(a) requires the licensee to ensure that each container of licensed materials bears a durable, clearly visible label bearing the words "CAUTION, RADIOACTIVE MATERIAL," or "DANGER, RADIOACTIVE MATERIAL." The label must also provide sufficient information (such as the radionuclide(s) present, an estimate of the

quantity of radioactivity, the date for which the activity is estimated, etc.) to permit individuals handling or using the containers, or working in the vicinity of the containers, to take precautions to avoid or minimize exposures.

Contrary to the above, on April 20, 2010 several housing containers of cesium 137 and cobalt 60 in the soda ash facility did not bear a label that identified the radionuclide(s) of the quantity of radioactivity, nor did it otherwise bear sufficient information to permit individuals handling or using the container, or working in the vicinity of the container, to take precautions to avoid or minimize exposure. Specifically, several of the housings were covered with soda ash to completely obscure view of the labels.

Solvay Chemicals, Inc. failed to provide durable, clearly visible labels to provide sufficient information, such as the radionuclides present, an estimate of the quantity of radioactivity, and the manufacture of the source. The direct cause of the violation resulted from not maintaining our labeling system for our radiation sources. Solvay Chemicals, Inc. is in the process of ordering Teflon signs that are durable, clearly visible and bearing the words "CAUTION, RADIOACTIVE MATERIALS" (see above corrective action).. In addition to the Teflon signs, each source will be assigned a specific number and the Teflon signs will bear sufficient information to permit individuals handling or using the container, or working in the vicinity of the container, to take precautions to avoid or minimize exposure. In addition, as part of the 6 month inventory, these manufacturer labels will be cleaned off; due to the environment the gauges are in, they become dirty quickly. By having added signs with "like" information, we will assure that the information is available to our personnel. This action of obtaining the Teflon signs and posting the pertinent information will be completed by July 10, 2010.

5. 10 CFR 20.1906(b) and (c) require that each licensee monitor the external surfaces of a packaged labeled with a Radioactive White 1, Yellow II, or Yellow III label for: (1) radioactive contamination, unless the package contains only radioactive material in the form of a gas or in special form as defined in 10 CFR 71.4; and (2) radiation levels, unless the package contains quantities of radioactive material that are less than or equal to the Type A quantity, as defined in 10 CFR 71.4 and Appendix A to Part 71. This monitoring shall be performed as soon as practicable, but no later than 3 hours after receipt of the package during the licensee's normal working hours, or not later than 3 hours from the beginning of the next working day if it is received after working hours.

Contrary to the above, on April 19, 2010, the licensee received a packaged labeled with a Radioactive Yellow II label during working hours on April 19, 2010, the package was not exempt from the monitoring requirement for radiation levels, and the licensee did not perform the required monitoring. Specifically, the package received by the licensee on April 19, 2010, contained 5 millicuries (0.185 GBq) of cesium 137 in non-special form (normal) form, and the package was not surveyed within the required 3 hour period.

Solvay Chemicals, Inc. failed to perform the required monitoring required within the 3 hours of receiving the package. The package was not 5 millicuries of cesium 137, but instead 5 millicuries of CO-60. The root cause of this action was due to not having immediate access to a calibrated survey meter. In taking prompt and comprehensive corrective action the CO-60 source was monitored the next morning once we received a calibrated monitor. This action was completed on April 20, 2010. The corrective action here is, Solvay will purchase at least one additional meter for use on the site. This meter will be ordered by June 7, 2010 and will be placed into service as soon as it arrives on site. Therefore, the date of compliance will be no later than July 10, 2010 (this date was selected to allow the manufacturer of the meter to ship it and for us to receive it and train workers on its use).

If you have any questions or need further clarification, please advise. I can be reached at 307-872-6616 or by e-mail [curtis.nelson@solvay.com](mailto:curtis.nelson@solvay.com).

Respectfully,

A handwritten signature in black ink, appearing to read "Curtis Nelson". The signature is fluid and cursive, with a long horizontal stroke at the end.

Curtis Nelson  
Senior Safety Representative  
Radiation Safety Officer

cc:

U.S. Nuclear Regulatory Commission  
Region IV  
Attention Vivian H. Campbell, Chief  
Nuclear Material Safety Branch A  
612 East Lamar BLVD, Suite 400  
Arlington, Texas 76011-4125

Engelhardt and Associates  
Attention Susan Engelhardt  
President of Engelhardt and Associates  
930 Elm Grove Rd.  
Elm Grove, WI 53122