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Security and Continued Use of Cesium-137 Chloride Sources and Notice of Public Meeting

Comment On: NRC-2008-0419-0001
Request for Comments on the Security and Continued Use of Cesium- 137 Chloride Sources and Notice of Public Meeting

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Submitter Information

Name: Robert Rushton
Address:
Hopewell Designs, Inc.
5940 Gateway Drive
Alpharetta, GA, 30004
Submitter's Representative: Robert Rushton
Organization: Hopewell Designs, Inc.

General Comment

Hopewell Designs, Inc. manufactures irradiators, primarily for use in instrument calibration. In the matter of the elimination of cesium chloride, we must argue for an approach that is not disruptive to the multiple industries affected and one that does not place an undue financial burden on the users of cesium chloride irradiators.

Attachments

NRC-2008-0419-DRAFT-0015.1: Comment on FR Doc # E8-17545

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Add = J. JANKOVICH (JPJ)

HOPEWELL DESIGNS, INC.

5940 Gateway Drive, Alpharetta, GA 30004 – 770-667-5770 – Fax 667-7539

September 22, 2008

Mr. Michael Lesar
Chief, Rulemaking Directives and Editing Branch
Office of Administration
Mail Stop T-6D59
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Ref: Notice NRC-2008-0419 "Request for Comments on the Security and Continued Use of Cesium-137 Chloride Sources and Notice of Public Meeting"

Dear Mr. Lesar:

I am writing in regard to Notice NRC-2008-0419 "Request for Comments on the Security and Continued Use of Cesium-137 Chloride Sources and Notice of Public Meeting" and wish to provide several comments in response to this notice. Under consideration is the replacement or elimination of cesium chloride because of the potential liabilities and social costs including the costs associated with the risk of terrorists attacks.

While I concur that the elimination of cesium chloride would help reduce these liabilities and risks, I must argue for an approach that is not disruptive to the multiple industries affected and one that does not place an undue financial burden on the users of cesium chloride irradiators.

Hopewell Designs, Inc. manufactures irradiators, primarily for use in instrument calibration. To my knowledge, there are several hundred irradiators in the United States used for instrument calibration that have category 2 cesium chloride sources.

The report National Academy of Sciences report "Radiation Source Use and Replacement" is quite extensive and provides facts and details on many of the questions posed in the Notice. This letter will not repeat information already presented there, but will strive to offer a perspective from a manufacturer's standpoint primarily on irradiators for instrument calibration.

The balance of this letter is arranged to correspond to the issues and questions found in Notice NRC-2008-0419.

Q1.1–2. Is the use of other forms of cesium feasible? If so, please describe desired methods and discuss any benefits or obstacles (e.g., intended function of source, costs, timeframe).
For instrument calibration irradiators, other forms of less dense cesium are feasible. However the major obstacle is whether these sources would fit in existing irradiators.

Q1.1–3. (a) Would the effect of density loading with different forms of cesium preclude their use in existing devices? (b) Would it require modification of existing devices?
Most calibrators are designed to fit the size of the source and not be any bigger than necessary. As a result, if less dense sources are used, the source holder and possibly the shielding around the source would require replacement. Because the source and shield make up the crucial parts of an calibrator, replacement costs would approach the cost of a new calibrator.

Q1.2–1. (a) Can cobalt-60 (Co-60) be substituted for radioactive CsCl for any applications? (b) If so, what types of applications? (c) If not, why not?
Because Cs-137 is the standard by which instruments are calibrated both within the US and internationally, replacing Cs-137 with x-rays or Co-60 is not a viable alternative without first changing the standards required for calibration. Cesium-137 is mandated as the standard by which radiation detection instruments for radiation protection and homeland security must be calibrated. International standards such as ISO 4037-1:1999 "X and gamma reference radiation for calibration dosimeters and doserate meters and for determining their response as a function of photon energy" require Cs-137. If cesium chloride is eliminated too quickly, there is the potential risk that the majority of radiation detection instruments would no longer be available for use as they fell out of calibration.

Q3.1–2. (a) What would be the consequences if CsCl was to be banned for irradiators that are used for industrial and calibration purposes? (b) What is the impact on existing American National Standards Institute (ANSI) standards and licensee conditions that require the use of Cs-137 for calibration purposes?
If CsCl were banned without a substitute form of Cs-137 available, a large portion of the radiation detection instruments in the United States would begin to fall out of calibration within a year of the ban. These instruments could no longer be used per federal and state regulations. To change the national standards, ANSI, DHS, and others, would take many years and I suspect, a large amount of persuasion to the nuclear community. In addition, international standards such as ISO 4037-1:1999 "X and gamma reference radiation for calibration dosimeters and doserate meters and for determining their response as a function of photon energy" require the use of Cs-137 for calibration. If the United States deviates from international consensus on calibration of radiation detection instruments, it could result in many unforeseen complications.

Q3.1–3. What would be the economic consequences to users if CsCl was to be banned?
The magnitude of economic impact would be driven by both the period of transition and the available alternatives. A rapid ban would cause major disruption: instruments would fall out of calibration resulting in the shutdown or limited operation of many radiation facilities. In the medical industry, without blood irradiators, many critical medical procedures would be prevented.

Assuming a reasonable transition period and an alternate form for Cs-137, the disruption to the users' operations could be minimized, but the costs will still be quite high. Many types of irradiators and calibrators would require extensive modifications and/or an entirely new irradiator. Transportation and disposal costs are currently quite high. There is no final disposal path for Cs-137.

While it is difficult to provide exact quantitative data on costs, rough costs are available. The cost of replacing calibration irradiators could range from $130,000 to $230,000 per irradiator. This assumes that an appropriate form of shipping casks would be available and that the new form of cesium would be no more that twice the current cost of CsCl. This price includes shipping estimates for the old irradiator and source, but does not include disposal costs of CsCl.

Q3.1–4. What would be the economic consequences to vendors if CsCl was to be banned?

Vendors will need to change irradiator designs to accommodate the new form of Cesium or an alternative isotope such as Co-60. While there would be a short term disruption, the banning of CsCl would actually represent a large new market opportunity to supply new or modified irradiators.

Q3.1–5. (a) Should the NRC discontinue all new licensing and importation of these sources and devices? (b) What is the regulatory basis? (c) Who (NRC, DHS, or jointly) should conduct the risk analysis?

We recommend that any changes in regulations be done in a reasonable time frame that does not cause major disruption within the industry. If an alternative form of cesium can become available, then CsCl could be phased out as the new form of cesium becomes available. If an alternate form of cesium can not be made available, we recommend that irradiators and CsCl used for calibration purposes be exempted from this regulation.

Q3.2–1. (a) Are there transportation packages available for transportation? (a) Who should bear the transportation costs?

Within the last several years, many Type B transportation packages that were suitable for irradiators and Type II category Cesium sources have lost their regulatory approval. There is a current shortage of transportation packages – both in various models and in quantity of casks. Many overpacks such as the 20WC are due to be retired October 1st this year. As a result, many irradiators have no easy way to be shipped. New packages are being licensed, but there is currently a severe shortage of available casks that have a reasonable cost.

Q3.2–2. (a) How could the current CsCl sources be disposed given that CsCl is defined as a "Greater Than Class C" source and currently has no disposal mechanism in the U.S.? (b) If disposal was made available by DOE, what would be the cost of disposal?

If an alternative form of Cesium is developed by Mayak, this laboratory could use the old CsCl sources as raw material for the new sources.

Q3.3–1. Should the Federal government issue incentives to implement replacements?

The community of users has purchased CsCl irradiators under current regulations and has absorbed the cost of compliance. Many of these users operate under a very tight budget. As a manufacturer of irradiators, we deal with this issue every day. Banning CsCl would place an undue burden on the users through no fault of their own. The motivation for the banning of CsCl is driven in part by an avoidance of a high potential cost to the society were CsCl to be used in a dirty bomb. The economic costs for this should not be imposed on the relatively few users. An incentive program could be an effective way to both help absorb some of these costs and motivate users to take action sooner rather than later.

Hopewell Designs, Inc. is committed to supplying irradiator calibration systems that are safe to use and do not pose an undue risk to society. We are also committed to our community of users and want to urge the NRC to consider their concerns before deciding how to proceed on this issue.

Thank you for giving us the opportunity to provide this input.

Sincerely,

Robert Rushton

President