THE DEPUTY SECRETARY OF HEALTH AND HUMAN SERVICES
WASHINGTON, D.C. 20201

SEP 17 2019

Charles Saunders
Rocky Flats SEC Petitioner
[redacted]

Dear Mr. Saunders:

Thank you for your request for an administrative review of the November 8, 2017, determination not to add a class of employees from the Rocky Flats Plant, Golden, Colorado, to the Special Exposure Cohort (SEC), established by the Energy Employees Occupational Illness Compensation Program Act of 2000 (EEOICPA).

Pursuant to 42 CFR § 83.18(b), and because you filed a challenge to this determination, a panel of three HHS personnel, independent of the National Institute for Occupational Safety and Health (NIOSH), was appointed to conduct an administrative review. The panel has now completed its review of your challenge.

After reviewing the administrative record in this case, the panel concluded that: (1) HHS substantially complied with the regulatory procedures set out in 42 CFR part 83; (2) the original determination contained no evidence of factual error and was supported by factually-accurate information; and (3) there were no errors of fact or in the methods of evaluation, or omission in the principal findings and recommendations of NIOSH and the Advisory Board on Radiation and Worker Health. In summary, the panel concluded that your challenge to the November 8, 2017, decision is without merit, and it has recommended no change to the determination to deny adding a class of workers at the Rocky Flats Plant for the time period from January 1, 1984, through December 31, 2005.

After review of the administrative review panel's thorough report, the Secretary decided not to revise the November 8, 2017, final decision, and asked me to relay his decision to you. I am enclosing a copy of the administrative review panel's final report, which I hope you find helpful. I am sending an identical copy of this letter to Terrie Barrie, your co-petitioner.

Sincerely,

signature on file

Eric D. Hargan

Enclosure

THE DEPUTY SECRETARY OF HEALTH AND HUMAN SERVICES
WASHINGTON, D.C. 20201

SEP 17 2019

Terrie Barrie
Rocky Flats SEC Co-Petitioner
[redacted]

Dear Ms. Barrie:

Thank you for your request for an administrative review of the November 8, 2017, determination not to add a class of employees from the Rocky Flats Plant, Golden, Colorado, to the Special Exposure Cohort (SEC), established by the Energy Employees Occupational Illness Compensation Program Act of 2000 (EEOICPA).

Pursuant to 42 CFR § 83.18(b), and because you filed a challenge to this determination, a panel of three HHS personnel, independent of the National Institute for Occupational Safety and Health (NIOSH), was appointed to conduct an administrative review. The panel has now completed its review of your challenge.

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Sincerely,

signature on file

Eric D. Hargan

Enclosure

DEPARTMENT OF HEALTH & HUMAN SERVICES

April 4, 2019

The Honorable Alex M. Azar II
Secretary of Health and Human Services
Department of Health and Human Services
200 Independence Avenue, S.W.
Washington, DC 20201

RE: Administrative Review of Rocky Flats Plant Special Exposure Cohort Petition 0192

Dear Mr. Secretary:

BACKGROUND

On November 8, 2017, as authorized under the Energy Employees Occupational Illness Compensation Program Act of 2000 (EEOICPA), 42 U.S.C. § 7384q(b), the Acting Secretary of the Department of Health and Human Services (HHS) at that time, Eric D. Hargan (hereafter "the Secretary") determined that the following class of employees does not meet the statutory criteria for addition to the Special Exposure Cohort (SEC):

> *All employees of the Department of Energy, its predecessor agencies, and their contractors and subcontractors who worked at the Rocky Flats Plant in Golden, Colorado, from January 1, 1984, through December 31, 2005.*

Pursuant to 42 U.S.C. § 7384q, a class may be designated for addition to the SEC if the Secretary determines, upon recommendation of the Advisory Board on Radiation and Worker Health (the Board), that: (1) it is not feasible to estimate with sufficient accuracy the radiation dose that the class received; and (2) there is reasonable likelihood that such radiation dose may have endangered the health of members of the class. The basis for the Secretary's decision in this case was the determination that it is feasible to estimate with sufficient accuracy the radiation doses encountered by employees at the Rocky Flats Plant in Golden, Colorado (hereafter "Rocky Flats" or "RFP"); accordingly, a determination of health endangerment was not required.

CONTEST OF DECISION

In a letter dated December 8, 2017 (hereafter "Appeal Letter"), petitioner Charles Saunders and co-petitioner Terrie Barrie filed a challenge to the November 8, 2017, determination. A copy of petitioners' appeal letter is attached. EEOICPA implementing regulations at 42 CFR § 83.18(a) provide that, in order to contest a final decision by the Secretary to deny adding a class to the SEC, a challenge "must include evidence that the final decision relies on a record of either substantial factual errors or substantial errors in the implementation of the procedures" set out in 42 CFR part 83.

The Administrative Review Panel (hereafter "Panel") wishes to provide a full and satisfactory response to the petitioners. Although we cannot respond to issues raised in the petitioners' appeal letter that are outside the scope of our review, we have responded to those issues that are within our purview.

The petitioners raised eight specific issues in the Appeal Letter:

1. Large Cobalt 60 Source - Building 779 and site wide;
2. Metal Tritides - Site Wide;
3. Safety concerns including the possible criticality in the year 1986 and falsification of records;
4. Neptunium - Site Wide;
5. Critical Mass Lab (CML)- Building 886;
6. Plutonium and other radioactive materials in "cold area" buildings – Buildings 440, 444, and 460;
7. Magnesium/thorium alloy plates used in Building 440; and
8. Division of Compensation and Analysis Support (DCAS) failed to review relevant documents.

The Panel addressed these allegations through its review of the Secretary's November 8, 2017, determination. This determination was based on the National Institute for Occupational Safety and Health (NIOSH) findings and conclusions.

ADMINISTRATIVE REVIEW PANEL

Pursuant to 42 CFR § 83.18(b), the Secretary appointed a panel of three Department of Health and Human Services (HHS) personnel, independent of the NIOSH, to conduct an administrative review and provide recommendations concerning the merits of the challenge and the resolution of the issues contested by the challenge. The undersigned, Donald L. Miller, MD, Andrea L. DiCarlo-Cohen, PhD, and Julie M. Sullivan, PhD comprise that Panel. Our collective expertise includes radiation medicine, occupational radiation protection, radiation exposure, radiation biology, radiation normal tissue injuries, radiation dose assessment and dose reconstruction, and radiation risk analysis. The Panel was charged with conducting an administrative review of the determination not to add a class of Rocky Flats employees to the SEC, which included reviewing the data and information that formed the basis of the prior decision.

In conducting our review, pursuant to 42 CFR § 83.18(b), we examined the views and information submitted by the petitioners in the challenge, the NIOSH Evaluation Report, the report containing the recommendations of the Board, the recommendations of the Director of NIOSH to the Secretary (including the September 12, 2017, NIOSH Basis for Determination memo, which was attached as Tab H of this recommendation), information presented or submitted to the Board, and the deliberations of the Board prior to the issuance of its recommendations. Given the numerous issues raised in this appeal, this Panel carefully reviewed the relevant documents in the record provided by NIOSH, including those for which the regulation permits, but does not require, Panel review. Since 42 CFR § 83.18(a) prohibits petitioners from introducing any new information or documentation, our review was based entirely on the administrative record in this case, as described above. The Panel did not have access to any classified material; the review was conducted based solely on the unclassified material.

STANDARD OF REVIEW AND MAIN CONCLUSION

Pursuant to 42 CFR § 83.18(b), we considered whether HHS substantially complied with the regulatory procedures set out in 42 CFR part 83, and whether the Secretary's final decision was supported by accurate factual information. We also reviewed the principal findings and recommendations of NIOSH and the Board. As explained below, we concluded that petitioners' challenge does not have merit and, thus, we recommend no revision to the Secretary's November 8, 2017, determination that denied adding a class of Rocky Flats employees to the SEC.

SUMMARY OF THE PRIOR DETERMINATION

The Secretary's November 8, 2017, determination (TAB A_Determination_Rocky Flats Plant.pdf)[1] states that NIOSH concluded, and the Advisory Board concurred, that dose reconstruction is feasible for all Rocky Flats employees who worked from January 1, 1984, through December 31, 2005. This finding was based on the administrative record, including the revised NIOSH evaluation report for the Rocky Flats Plant, SEC Petition Evaluation Report: Petition SEC-00192, Report Rev. #1, (Evaluation Report Rev.1_093013.pdf), which evaluated the feasibility of reconstructing doses for all employees of the Department of Energy, its predecessor agencies, and their contractors and subcontractors who worked at the Rocky Flats Plant in Golden, Colorado from April 1, 1952, through December 31, 2005. Specifically, the Secretary determined (page 3):[2]

- The potential sources of internal radiation that NIOSH investigated during its evaluation of the proposed class included exposures to tritium, neptunium, thorium, uranium-233, and fission and activation products at the Critical Mass Laboratory (CML). The modes of exposure for the radionuclides of concern were ingestion and inhalation.

- NIOSH concluded that tritium doses from the on-site, environmental release in 1973 can be reconstructed using the bioassay results collected after the release. Bioassay results from potentially exposed individuals can be used to reconstruct their tritium doses for the time period from January 1, 1974, through December 31, 2005.

- Likewise, NIOSH concluded that doses from fission and activation products at the CML can be reconstructed using workplace air monitoring results coupled with information about the power level and duration of CML experiments.

- The principal sources of external radiation doses for members of the proposed class were evaluated in the SEC-00030 RFP evaluation report.[3] SEC-00030 concluded that all external doses except those for neutrons could

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[1] Citations are to the electronic administrative record provided by NIOSH to the Panel for the review of this appeal.

[2] When the original document is paginated, the number provided in this recommendation is the page number in the document, in the form 'page x'. When there is incomplete or no pagination in the original document, the page number provided in this recommendation refers to the page number of the PDF file, in the format 'page x of y.'

[3] This refers to the evaluation report for a prior Rocky Flats SEC petition 00030; the current Rocky Flats SEC petition is 00192.

be estimated with sufficient accuracy. Therefore, with respect to SEC-00192, NIOSH concluded that there is no need to again assess external exposures and dose reconstruction feasibility at RFP.

- NIOSH also concluded that operations that posed significant potential for internal and external exposure to neptunium, thorium, and uranium-233 had ended by December 31, 1983. Consequently, there is no need to reconstruct doses resulting from these radionuclides for the time period.
- NIOSH has established that it has access to sufficient information to: (1) estimate the maximum radiation dose, for every type of cancer for which radiation doses are reconstructed, that could have been incurred in plausible circumstances by any member of the class; or (2) estimate radiation doses more precisely than an estimate of maximum dose.

- The Board concurred with NIOSH's determination that dose reconstruction is feasible for the evaluated class of RFP workers during the period from January 1, 1984, through December 31, 2005, and therefore should not be added to the SEC.

Thus, NIOSH recommended, the Advisory Board concurred, and the Secretary determined, that the following employees do not meet the statutory criteria for addition to the SEC:

> All employees of the Department of Energy, its predecessor agencies, and their contractors and subcontractors who worked at the Rocky Flats Plant in Golden, Colorado, from January 1, 1984, through December 31, 2005.

FINDINGS OF THE ADMINISTRATIVE REVIEW PANEL

With respect to the petitioners' eight points above, we have separated out each of these into individual points. We provide the following comments for each point as part of our review and analysis.

1. Large Cobalt 60 source - Building 779 and site wide

The petitioners state (Appeal Letter, pages 9-10) that "DCAS provided an incorrect response to the Board regarding a classified interview that was to take place concerning the large Cobalt 60 source," in that "Mr. Rutherford confused a completed classified interview with a former Rocky Flats employee with the proposed interview with the custodian of the Cobalt-60 source, [and] this response misled the Board to assume the classified interview concerning additional exposures from the source was completed and nothing relevant was discovered. We still do not know what exposure concerns the custodian has."

The Panel reviewed the transcript of the February 9, 2017, meeting of the Working Group (67_wgtr020917.pdf).[4] On pages 23-24, LaVon Rutherford stated:

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[4] Note that some documents, including this one, are duplicated in the record in different locations with different file names. For convenience, when such a document has been cited in a footnote in NIOSH's "Basis for Determination" memo (TAB H Basis for Determination Memo.pdf), the file name provided by NIOSH for that document in the folder "Tab H references" has been used. The first two characters of these file names (e.g., "67") refer to the footnote number in NIOSH's Basis for Determination memo.

> petitioner's concern with the cobalt-60 source. We provided a leak check survey, an area survey for the unit and...work package for... removing the unit...Dr. McKeel indicated that it would be better if you had more leak check surveys. We did do a number of data searches at the records center in Denver and we were not able to find any additional...actual surveys. But we did find a 1987 health physics audit report that indicated the leak check had been conducted and showed no leaks. We found specific requirements in health physics documents requiring leak tests be performed at six-month intervals. We also found a document that indicated who the source custodian was, and we were able to interview the source custodian last week. The source custodian indicated that the source was routinely checked and never found to be leaking. The person indicated this unit was rarely used after 1979 until its removal in 1999. The person also indicated they had no idea where the actual surveys had went to. So after our review we concluded that the requirements did exist for leak checking the source. And based on that 1987 report and the source custodian interview and leak test that we do have from 1999, I believe, we concluded that leak test measurements were made. We also concluded that if the gamma cell had leaked it would have been seen during contamination surveys when they were prepping the unit for removal. So we find the cobalt-60 source is not an issue. [Emphasis added.]

In the same transcript, page 25, Mr. Rutherford continues,

> during our interview with the source custodian, the person indicated that they ... had other exposure concerns that they could not discuss over the phone. ... So we are currently working on setting up a classified - or a secure interview and we would like to have a cleared Work Group Member and SC&A. [Emphasis added.]

The petitioners also state (Appeal Letter, page 9) that in the transcript of the Board meeting held on March 23, 2017, Mr. Rutherford answered a question from member Kotelchuck with incorrect information, confusing two different interviews. The Panel reviewed this transcript (2017_03_23 Board transcript_RF.pdf). The relevant portion is on pages 69-70:

> MEMBER KOTELCHUCK: ...on the cobalt-60, the assertion is that we didn't interview someone outside....
> MR. RUTHERFORD: Actually, the cobalt-60 source, the person did request an interview. That interview was conducted in a classified setting. The individual was not concerned with Cobalt-60. She was concerned with a tritium capture system that was employed during the production years.
> She did not identify any situation where exposures could have been received from work with that unit. I can't discuss all of it, but I can give you that much. But, in fact, her interview said she had no issues with the cobalt-60 gamma cell. It was routinely surveyed. We could only come up with two or three of the leak checks, but we did find the complete work package for the removal of the gamma cell and we had no indications there was ever any problems with that. [Emphasis added.]

The Panel concludes that DCAS did not provide an incorrect response to the Board because the interview with the source custodian related to the cobalt-60 source did take place, and that the other, classified interview dealt with an unrelated tritium capture system. We further conclude that the source custodian did not have concerns related to the cobalt-60 source.

2. Metal Tritides - Site Wide
The petitioners state (Appeal Letter, pages 10-12) that:

> DCAS acknowledges that tritium was present at Rocky Flats during its entire operation, yet they only investigated the presence of tritides during the mid-1970s. DCAS failed to thoroughly investigate the presence of tritides at Rocky Flats after December 31, 1983. They ignored a document provided by Jon Lipsky, former FBI agent who led the raid on Rocky Flats. This was an interview conducted on June 11, 1991 and provided to NIOSH. The former worker, who was a chemical engineer, stated, 'the tritium site was separate. Due to the ongoing practice of conducting Classified Projects at Rocky Flats, tritium was ***produced*** and disposed of at the plant, in the area of the 207 ponds.' [Emphasis in original.]

The panel reviewed a number of documents related to tritium and metal tritides. 34_dc-rfpsec192trit-r3.pdf is an extensive NIOSH review of tritium but limited to tritium gas and tritium hydride. In a transcript of a Work Group meeting held on March 17, 2015, (66_wgtr031715.pdf), Mr. Fitzgerald states, on page 207,

> metal tritides had a weapons complex application, but that application was in a sealed component in every place except for Mound and Los Alamos. So, one would expect that to be a sealed component at Rocky...you have some residual tritides in locations, because it's just a particulate form of tritium... you would only expect to see non-sealed tritides, like hafnium tritide at Mound and at Los Alamos.... Everywhere else they would have existed, but in sealed components.

Further on in this document (pages 209-210), there is an interchange between Mr. Fitzgerald and member Munn regarding metal tritides:

> MR. FITZGERALD: Yes, it has an internal issue but... where does it exist in that form and would it be available for exposure... and even if you do have it for exposure, the actual exposure amounts to a millirem. It's still a very small exposure.
> MEMBER MUNN: Even fractions of a millirem.
> MR. FITZGERALD: ...even though it's not easily detectible, the implications are not as great as ---
> MEMBER MUNN: I guess I can't see any probability of danger, of physical danger as a result of what I've been shown ---
> MR. FITZGERALD: Well, I think the first thing is, does it exist in an insoluble form and available for exposure at Rocky.
> ...
> MEMBER MUNN: The answer is not to worry. It is not going to affect what we have to do.

> MR. FITZGERALD: Well, yes. The answer to the first question will determine how far you go with it...
> MR. RUTHERFORD: ... we're all in agreement the tritium exposures are low.

In a subsequent document, 35_sca-rfpsec192tritr2-r0.pdf, page 10, there is a review of the Working Group discussion by Sanford Cohen and Associates (hereafter "SC&A"):

> With respect to metal tritides, a discussion begins on page 206 of the transcript indicating that the presence of metal tritides at the facility had a very specific purpose (they were sealed), and there was very little likelihood that there were any exposures to metal tritides as they were used at Rocky Flats.

The Panel concludes that NIOSH did consider and investigate the possibility of worker exposure from metal tritides. NIOSH found that metal tritides were not present in a form that could lead to more than a minimal exposure. The Panel also concludes that documents related to production and disposal of tritium at Rocky Flats and any ongoing processes of tritium production, storage and disposal are not relevant to the concerns regarding metal tritides. Tritium existed in other chemical forms, but monitoring was in place to evaluate exposure to these forms. The Panel therefore concludes that NIOSH performed an adequate investigation and adequately researched the presence and exposure potential of metal tritides at Rocky Flats after December 31, 1983.

3. Safety concerns including the possible criticality in the year 1986 and falsification of records

To simplify the discussion of these issues, they are discussed separately.

Possible criticality in 1986:

The petitioners state (Appeal Letter, page 13) that "the safety concerns discussed in 2007 did not include the possible criticality which occurred in 1986," and that "[i]f there was a criticality in 1986 and ignored by DCAS, then it is likely that the methodology to reconstruct dose is woefully underestimated."

The Panel reviewed a number of documents regarding the possible criticality in 1986. 51_dc-rfpdatafals-r4.pdf states (page 19) that the possibility of a criticality incident in 1986 appears to be based on an FBI agent's "contention that the flyover data indicate the presence of the isotopes Cs-137 and Sr-90, which is used to imply that an unreported criticality occurred at RFP," but "[n]o August 1989 flyover survey has been located, as asserted by the former agent. In addition, no specific information was located that supported a criticality event, as claimed by the agent."
Further, as discussed on pages 19, 21, and 22 of 51_dc-rfpdatafals-r4.pdf, additional documents (SRDB 131929, SRDB 133226 and SRDB 132825) do not support the contention that a criticality occurred in 1986 and other, independent assessments also found no evidence of a 1986 criticality. In particular:

> Subsequent interview discussions and a report obtained from an interviewee do not corroborate the occurrence of a criticality at RFP. This includes the 1989 Criticality Safety Assessment at Rocky Flats that starts on page 277 (of the

> PDF file) of the Assessment of Environmental Conditions at the Rocky Flats Plant (SRDB 131929). The Assessment Team found no indication that a criticality accident ever occurred at Rocky Flats. [Page 19.]
>
> The third interview (SRDB 132825) was with an individual that had never been an employee or contractor at RFP. The only two associations this person had with RFP was as part of a Governor's panel to investigate unreported criticalities and serving as part of a NIOSH Health Surveillance Program. As part of his/her response, the individual reported that no indications were identified that supported the occurrence of a criticality at RFP. The individual provided a copy of the report he/she helped to develop as part of that follow-up. As part of his/her investigation, the individual looked for anomalies in personnel doses as well as flyover data. His/her investigation revealed no suspicious information and indicated that there was good continuity in the data. [Page 21.]

NIOSH concluded (51_dc-rfpdatafals-r4.pdf, page 22):

> The claim of an unreported criticality incident at RFP was investigated from several points of view in the documents that were reviewed, as well as during the interviews of knowledgeable individuals; no supportive evidence of a criticality incident was found. NIOSH concludes that no information relating to this issue impacts the ability to reconstruct individual dose under EEOICPA.

The Panel concludes that the record does not support or provide evidence for a possible criticality in 1986, and therefore the methodology to reconstruct dose is not "woefully underestimated" as a result.

Falsification of records:

The petitioners state (Appeal Letter, page 13) that "Several workers provided examples of dosimetry documents that showed cross-outs and whiteouts. One worker had a classified interview which she related that a grievance was filed by the Local concerning using a pencil to record dose. The petitioners provided a Department of Energy (DOE) document concerning the destruction of records." Also (Appeal Letter, page 14), "In addition, a former worker came forward and testified before the full Board that she destroyed records under orders from her superiors. The worker also agreed to be interviewed in a classified setting."

The Panel found that there was, without question, both falsification and destruction of records at Rocky Flats. NIOSH did not dispute this. The relevant question is whether falsification and destruction of records made it impossible to bound or reconstruct doses for the purposes of EEOICPA. NIOSH dealt with this question in detail. The quotations below are from 51_dc-rfpdatafals-r4.pdf.

NIOSH found that it was able to bound or reconstruct dose for the class:

> While the documents being destroyed could have been some kind of field surveys, it does not appear that those surveys have an impact on NIOSH's ability to bound or reconstruct dose for the class, as long as the personnel monitoring data exist. Based on a review of some of the files that were provided

as examples of documents that the interviewee believed were destroyed, NIOSH found that the records did exist in the associated personnel files in NOCTS [NIOSH OCAS Claims Tracking System]; thus, those files were not destroyed. [Page 14, emphasis added.]

..., the issue of 'penciling-in' information appears to be referring to radiological field survey records that directly relate to on-going production operations. The only dosimetry information that may be included in such field surveys would be from direct-reading dosimeters (DRDs) or personal ion chambers (PICs – a.k.a. Pencil Dosimeters). Field survey information is used for comparison purposes in the performance of EEOICPA dose reconstruction; however, the primary and most impactful source of radiological information for the purpose of individual dose reconstruction is the individual TLD dosimetry and bioassay information. TLD and bioassay analyses are performed in a laboratory and not documented in the field, in contrast to the surveys and reports discussed in the claim raised by this individual. Therefore, it is not expected that the original, handwritten documents that the interviewee refers to in the destruction process are related to an individual's TLD or bioassay results (with electronic readouts – SRDB 953; 24337; 24342). [Page 15, emphasis added.]

Contamination incident and survey data are used to supplement the personnel monitoring data in the performance of dose reconstructions under EEOICPA. Personnel monitoring data are considered the primary data sources for the process. Therefore, NIOSH concludes that this issue does not impact the dose reconstruction process. [Page 16.]

No information provided during this interview [SRDB 130493] supported the allegation of document destruction activities at RFP. While the individual discussed his/her concerns with the implementation of radiological limits and controls as well as dose reporting during his/her employment, up to the point of the implementation of the DOE Radiological Control Manual at the site (late 1980s to early 1990s) and the FBI raid, there were no identified impacts on the ability to bound dose for the portion of the class of RFP workers being assessed as part of this white paper. ... The other concerns that were relayed were associated with personal radiological monitoring records and the documentation of the statistical or sample-counting variations that may produce positive and negative bioassay results associated with the analysis of a potential exposure situation in an individual's dose records. ... These issues were assessed by ORAUT Principal Dosimetrists who considered the interviewee information, reviewed claimant files for comparable/corroborating situations, and assessed the impacts of the verified issues on the completion of the NIOSH EEOICPA dose reconstruction process. The assessment specifically focused on any negative impacts that the interviewee concerns may have on individual dose reconstructions. The ORAUT Principal Dosimetrists did not identify any situations or issues that impact the ability to reconstruct dose for the RFP worker class being assessed as part of this white paper. [Pages 17-18, emphasis added.]

The Panel concludes that the record does support the existence of both falsification and destruction of records at Rocky Flats, but that NIOSH is nonetheless able to bound or reconstruct dose for the class because either (a) the false or destroyed records are not primary sources for dose reconstruction, or (b) duplicates of the destroyed records exist, or (c) other records or methods exist that permit reconstruction of worker dose.

4. Neptunium - Site Wide
The petitioners state (Appeal Letter, page 14) that:

> The Evaluation Report issued on September 9, 2012 stated that neptunium was handled in small quantities at Rocky Flats. An internet search provided a document which showed that there was a process for neptunium production. This document was provided to DCAS and the Work Group on February 26, 2013, eight days after ANWAG submitted their complaint to the Health and Human Services Inspector General.
>
> Again, seven months after the submission of the DOE document, DCAS determined they were unable to reconstruct dose with sufficient accuracy for neptunium exposure prior to January 1, 1984. This was accepted by the Board.
>
> The assertion that DCAS can reconstruct dose for workers after December 31, 1983 is based on the premise that they can use plutonium bioassay data for this purpose. DCAS had plutonium bioassay results prior to December 31, 1983. If those records were not sufficient then, why are they now sufficient after that date? According to a 2005 DOE document, 'Inspection of Environment, Safety and Health Programs at the Los Alamos National Laboratory' DOE determined that plutonium bioassay cannot be used to reconstruct neptunium exposure.

The Panel reviewed a number of documents related to neptunium (Np). 25_dc-rfpnp237-r1.pdf, states (page 3):

> Neptunium was processed at Rocky Flats as early as 1962 (SRDB 24722, PDF p. 6). There is no evidence of continuous routine neptunium operations at Rocky Flats; rather, the evidence points to a series of discrete tasks performed from 1962 through 1983, involving a few grams to a few hundred grams. [Emphasis added.]

These operations, involving high purity Np-237, were the basis for NIOSH's conclusion that it was not possible to bound Np exposures in the period from January 1, 1962 through December 31, 1983. After December 31, 1983, no operations involving high purity Np-237 were performed. From 25_dc-rfpnp237-r1.pdf, (pages 3-4):

> Since that report [SRDB 132777] was issued, NIOSH has conducted an extensive search for evidence of Np processing after 1983. The result of this effort has been the identification of a single operation described in a 1987 document, *Production-Scale Plutonium-Neptunium Separation and Residue Recovery at Rocky Flats Plant* (SRDB 129512). This document does not make clear exactly when this operation took place, although it does indicate that the

> campaign lasted approximately one year. NIOSH interviewed one of the authors, who was also the Principal Engineer who designed the process and directed the activities. He estimated that the operation began around January 1985 (SRDB 130877). This is the only post-1983 Np operation that NIOSH has been able to confirm.

26_sca-rfpnp237-052915.pdf, states (pages 2-3):

> After 1983, document reviews and interviews have uncovered only one Np operation, an approximate 1-year campaign in the mid-1980s that processed plutonium scrap containing residual amounts of Np in order to recover neptunium and purify plutonium ... Key attributes of this operation, Plutonium-Neptunium Separation and Residue recovery, were (1) the processing of the Pu/Np scrap in a "closed" separation system ..., and (2) lack of any 'pure' plutonium or neptunium source term (both metals were produced with impurities of the other, i.e., 'purified' plutonium contained 0.0069% neptunium and 'purified' neptunium was co-generated with plutonium at a Pu:Np mass ratio of 6.4) (NIOSH 2015).
>
> The implication of the first attribute of this particular operation is that no routine exposure potential would have existed for workers performing the extractions at the glovebox. Workplace monitoring for this operation included continuous air monitoring (CAM), contamination surveys, and routine bioassay (urinalyses and body counts) typical of a plutonium-handling environment for all workers involved. From interviews and reviews of incident reports, only one incident, involving a leaking tank, occurred and no worker exposure took place.
>
> The implication of the second attribute is likewise important, in that the continuing presence of plutonium with neptunium product provides a means for radiological monitoring of this operation, given the much greater specific activity attributable to Pu as compared with Np, making any uptake of the Pu/Np mixture detectable via bioassay results (all personnel were provided routine bioassays during this operation). The predominance of plutonium relative to neptunium was confirmed in a review of RFP neptunium-containing waste shipped to Idaho National Engineering and Environmental Laboratory for disposal (mean mass ratios of Pu-239/Np-237 ranged from 105 to 6,450 in drums assayed, and mean mass concentrations ranged from 109 to 5,820) (SRDB 104511). [Emphasis added.]

As noted in 25_dc-rfpnp237-r1.pdf,

> The dose from any internal exposure would have been dominated by the overwhelming amount of plutonium in the mixture, making neptunium bioassay unnecessary. Given the much greater specific activity of Pu-239, Pu bioassay would account for all organ doses, of which Pu would be the dominant component. [Page 4, emphasis added.]

. . . . .

> The previous discussion also noted that this single post-1983 operation did not involve purified Np, but rather Pu with Np as a contaminant. Since the specific activity of Pu-239 is about 90 times greater than that of Np-237, the activity ratio of this Pu:Np mixture is greater than 500. As a result, all organ doses resulting from an intake from such a mixture would be dominated by the Pu component. The Np dose component would comprise only about 0.1% for Type M Pu for most organs, and only about 1% for Type S Pu (SRDB 137075).
>
> In conclusion, NIOSH finds no evidence that Np-237 intakes occurred at RFP after December 31, 1983. If intakes had occurred during this period from the single identified Np operation, the resulting organ doses would be adequately accounted for by the available Pu bioassay data. [Page 10, emphasis added.]

After the conclusion of the year-long Np purification operation, Np was still present at Rocky Flats. As stated in 26_sca-rfpnp237-052915.pdf:

> Beyond the one post-1983 Np operation identified, NIOSH observes that neptunium was present at RFP from 1962 to 2003, with quantities ranging from 29 grams to 1,319 grams (SRDB 33009). While the one post-1983 Np program was reportedly terminated by 1988, neptunium remained in inventory and as residual contamination in gloveboxes, ductwork, and other process equipment. In its review of an interview with a former RFP engineer (SRDB 138666), NIOSH concluded that for post-1983 handling of this contaminated equipment [e.g., during decontamination and decommissioning (D&D) and site closure activities], it does not 'dispute the potential for personnel Np exposures,' but 'contends that the exposure would be dominated by the Pu (nothing involved purified or pure Np), and nothing provided up to this point disputes that contention' (SRDB 138666). [Page 3, emphasis added.]
>
> SC&A, likewise, has not identified any information that would point to potential worker exposure after 1983 involving pure or purified neptunium, albeit such neptunium was in storage or being shipped by RFP during that time. ... While contaminated areas and equipment were frequented by RFP workers during cleanup and site closure, and there was a likelihood of exposure to neptunium contamination during these activities, this contamination would have been dominated by the plutonium also present and monitored by either routine or event-driven bioassay. [Pages 4-5, emphasis added.]
>
> SC&A notes that all interviewees agree that neptunium remained at RFP beyond 1983 and into final cleanup, and that contaminated equipment (e.g., gloveboxes and ductwork) with trace amounts of Np would have undergone D&D. However, none of the interviewees identified any other operations involving Np and no one cited processing of pure or purified Np that would have had exposure potential. [Page 5, emphasis added.]
>
> SC&A reviewed the relevant RFP documents in the SRDB... Counting all alpha monitored as being plutonium appears to be claimant favorable in this case. [Page 6, emphasis added.]

The Panel concludes that NIOSH acted correctly in determining that data are insufficient for estimating internal Np exposures prior to December 31, 1983, but that Pu bioassay data are adequate to bound Np exposure after that date, because (1) pure and purified Np and Np alloys were used, and Np recovered, from various production residues prior to January 1, 1984, but not after that date, (2) small amounts of pure or purified Np were in storage or being shipped by RFP after 1983, but there is no evidence in the record of potential worker exposure involving this material, (3) the circa 1985 process to purify Pu yielded "purified" neptunium that was predominantly Pu, (4) organ doses resulting from an intake of this "purified" neptunium would be dominated by the Pu component, (5) counting all alpha monitored after January 1, 1984 as being Pu, even if due to Np, would be claimant favorable, and (6) these considerations also apply to any Np exposure due to decontamination and decommissioning activities.

5. Critical Mass Lab (CML)- Building 886
The petitioners state (Appeal Letter, pages 15-16) that

> (a): NIOSH's assumption that the average [CML criticality] experiment lasted 70 minutes...is a low estimate...about 15 to 20 minutes would be devoted to the 'slightly super and slightly subcritical conditions' alone. A few experiments...were 'intentionally kept at or near criticality for hours.'
>
> (b): *NIOSH has found no indication that confirmatory bioassays were performed for employees involved in the clean-up of any of the accidental UNH [enriched uranyl nitrate solution] spills. Fission and activation products, which decay primarily by beta/gamma emission, are not likely in any case to have been detected by bioassay intended to detect alpha particles emitted by uranium or transuranic radionuclides.'*... If fission and activation products can't be detected by bioassay, how does NIOSH plan to reconstruct dose for beta/gamma exposures for these workers? [Italics in original.]
>
> (c): NIOSH focused only on HEUN [highly enriched uranyl nitrate]...CML also had 375 kg of very old Pu because it was rich in AM-241...workers would have been exposed to HEUN when there were no experiments being conducted...CML staff was required to inventory HEUN 'which would have exposed workers to 4 months of daily hands on contact with irradiated radioactive material.'

To simplify the discussion of these issues, they are discussed separately. In addition, because a CML scientist flagged many of the issues listed above as concerns, we have included a section to address this.

a) Assumptions regarding criticality experiments:

NIOSH determined (01_rockyer.pdf):

> The [Nuclear Criticality Safety] group ... conducted about 1,600 critical mass experiments using EU [enriched uranium], including Pu in solutions (800 tests), compacted powder (300), and metallic forms (500). After 1983, criticality

> experiments were not conducted with solid materials; they were conducted primarily with uranyl nitrate solutions, which were reused. [Page 22.]
>
> Short-lived fission products were produced, and none were indicated as having been released to the work or outdoor environment. The isotopes decayed rapidly and were contained until stable. [Page 24.]

10_SW-A-005612.pd.pdf also states (page 94):

> Approximately half of the 1600 criticality experiments conducted in Building 886 actually achieved criticality ....The experiments conducted in the RFP laboratory generally involved power levels and the associated heat generated of no more than 10 milliwatts for no more than one hour (ChemRisk, 1991; RE-891[53]).

Comments made during Rocky Flats Working Group meetings regarding the possibility of higher power outputs, ("...10 to 20 watts instead of 10 milliwatts.") during the criticality experiments, as well as longer periods of time involved in each study ("two-and-a-half-hours instead of one hour"), (54_wgtr071415.pdf, page 67) were also considered to ensure that data used by NIOSH in their calculations were appropriate, correct, and claimant favorable.

NIOSH reassessed the criticality experiments based on this information and considered additional data. A reassessment of typical criticality experiment power and duration, based on contemporaneous CML records and reports, resulted in a revision to the original estimates, but is still claimant favorable (43_dc-rfpirdcml-r0.pdf, page 8).

In 43_dc-rfpirdcml-r0.pdf, evidence was revisited in response to claimant concerns after discussions with a senior CML scientist. As stated on page 36:

> Re-evaluation of unmonitored personnel dose using recently captured air monitoring data and reactor performance estimates for the Rocky Flats Plant Critical Mass Laboratory has resulted in estimates on the order of a few nanosieverts for maximum organ doses due to inhalation of resuspended contamination containing mixed fission and activation products. These estimates are over two orders of magnitude lower than previous estimates. The greatest contributor to the large reduction in estimated doses is a correction in the calculation of a conversion factor. Lesser contributors to the reduction are lower estimates of reactor power in a typical criticality experiment at CML, and a lower value for respirable alpha air concentrations based on routine air monitoring results. [Emphasis added.]

The newer calculations resulted in lower estimated levels of internal radiation exposure than were reported initially but are nonetheless claimant favorable (44_sca-rfpirdcmlr0.pdf, page 8).

> NIOSH used reasonable and claimant-favorable assumptions and parameters in deriving the potential MFAP [mixed fission and activation products] intakes and doses for CML workers at the RFP. SC&A did not identify any outstanding error in the calculations or any data issues in the NIOSH's process. Various parameters and scenarios could be used to estimate the potential MFAP intakes

> at the CML, with differing results. However, as indicative of the very small MFAP doses derived by both NIOSH and SC&A, even a change of a factor of 10 or 100 in the results would not alter the conclusions that the potential doses from MFAP were very small, and much less than 1 mrem, the minimum dose used in the dose reconstruction.

With regard to accidents and potential exposure of CML cleanup workers, no alphas were detected and contamination and air sampling surveys, as well as bioassay data are available for individuals who worked at CML during that period. Further, when the facility was decommissioned, bioassays were done to detect uranium, and prompt decontamination was carried out, along with air monitoring.

b) Issues related to bioassays:

The petitioners expressed concern regarding a lack of bioassays in CML for personnel involved in clean-up of accidental spills and the ineffectiveness of bioassays for detecting fission and activation products. NIOSH concluded that RFP had a good overall air monitoring program, which would have indicated the presence of potential external exposures. 43_dc-rfpirdcml-r0.pdf states, on page 20:

> NIOSH has since captured formal plant-wide procedures describing a particulate air monitoring program during the period from 1980-1989 for alpha-particle emissions...Additional captured documents indicate that these procedures appear to have been followed and that routine alpha air monitoring was performed at CML during the period 1980-1989.

The results of air sampling, contamination surveys and bioassays were discussed at an Advisory Board meeting in March, 2017 (2017_03_23 Board transcript_RF.pdf, pages 68-69):

> CHAIR MELIUS: The CML cleanup workers spills?
> MEMBER KOTELCHUCK: The cleanup of activity was...that we were not detecting alpha particles... there was cleanup.
> MR. RUTHERFORD: Oh, we have documented surveys. We have contamination surveys. We have air sampling from the entire period. The issue was, was there post-accident bioassay? We could not confirm that, but we do have the actual bioassay for individuals that worked in the actual Critical Mass Laboratory during their period. It does not address fission and activation products, and we did mention that, because, at the time, the site did not feel that it was necessary. And our calculations prove that it was not. The highest dose we came up with was 2.5 times 10 to the minus fourth millirem potential exposure at the Critical Mass Lab from fission and activation products.

This monitoring would have detected any possible alpha exposures and can therefore be used to bound dose for CML workers.

NIOSH concluded (43_dc-rfpirdcml-r0.pdf), on page 36:

> no significant personnel dose to Rocky Flats workers or contractors resulted from the generation of fission or activation products in the uranyl nitrate fuel or

> resuspended contamination from fuel spills as a result of criticality experiments conducted at CML over its lifetime.

In 38_dc-rfpradexpsrc-r0.pdf, on page 21, NIOSH concluded further that:

> external radiation exposure to CML workers and staff is accounted for by Rocky Flats' personnel dosimetry program, which assigned radiation dosimeters to all workers. The personnel dosimetry program also included periodic bioassay (urinalysis and body counts) that focused primarily on identifying uranium and plutonium intakes. The *in-vivo* bioassay, using gamma spectrometry, would be expected to easily detect most fission and activation products present in any significant amount, except for radioisotopes like Sr-90, which emit beta radiation not detectable in a routine body count or in a urinalysis evaluated for alpha-emitters.
>
> ...
>
> Organ doses to individual radionuclides from inhalation of re-suspended contamination at CML are less than 10^{-6} Sv, with the largest total organ dose being 1.1×10^{-6} Sv to the thyroid, if radioiodines are included (a very claimant-favorable assumption).

Also, in the same document NIOSH concludes, on page 22:

> based on the weight of evidence from the detailed history of the CML, computer modeling of criticality experiments, and radiological measurements after operations ceased, that no significant personnel dose to Rocky Flats workers or contractors resulted from the generation of fission or activation products in the building materials and fixtures of the Building 886 Cluster as a result of the criticality experiments conducted there over its lifetime.

A subsequent SC&A review states (39_sca-rfpradexpsrc-r0.pdf, page 8) that:

> results of this analysis suggest that the external doses and internal intakes from potential exposures at the CML were monitored in a manner that would mostly likely not result in significant exposures going undetected for dose reconstruction purposes.

Thus, potential exposures can be bounded based on overall available data from air sampling, contamination surveys and bioassays at Rocky Flats.

c) Exposure to HEUN and Pu:

43_dc-rfpirdcml-r0.pdf discusses surface contamination (pages 8-20), workplace air monitoring (pages 20-29) and assessment of unmonitored dose from spills of uranyl nitrate and mixed fission and activation products (pages 30-36) in the CML in detail. In 2017_03_23 Board transcript_RF.pdf (page 50), Member Kotelchuck summarizes the findings in 43_dc-rfpirdcml-r0.pdf as follows:

> Routinely collected data was found for external exposures monitored via personnel badges and daily radiation surveys at control points. Potentially

> contaminated surfaces were checked regularly for alpha radiation via tissue smears. Internal exposures resulting from inhalation and ingestion of airborne dusts and resuspension from contaminated surfaces were assessed via bioassays, and with an adequate amount of exposure data and amount of data.

The petitioners also expressed concern over "375 kg of very old Pu because it was rich in Am-241" in the CML (Appeal Letter, page 15). However, in 54_wgtr071415.pdf (pages 68-69), a CML scientist mentions the Pu referred to by the petitioners:

> the age of the plutonium metal cylinders, we got these metal cylinders for experiments in the 1970s sometime and we returned them to the production stream in 1983. By that time, the plutonium metal was about 25 years old and would -- there is a natural process that inbreeds americium-241 into the plutonium-239. And that -- and that makes the resultant plutonium metal cylinders much more hazardous to handle or deal with.

The period from the 1970s through December 31, 1983 is already included in a SEC, and the Pu in question was no longer in the CML during the time period covered by the petitioners' current appeal. The Panel concludes that Pu in the CML is not an issue for the current appeal and that sufficient data are available to bound exposures from HEUN.

Concerns expressed by a CML scientist:

As recorded in 54_wgtr071415.pdf, (pages 62-80), the scientist expressed strong disagreement with NIOSH's conclusions, and requested an interview with the Working Group. The substance of the interview, which was conducted in October of 2015, is summarized in 2017_03_23 Board transcript_RF.pdf (page 49). During the interview, the scientist argued that it is not possible to bound the neutron flux in CML's near-criticality experiments. He asserted that the radiation levels at CML were not properly documented, and body counts were not done on the lab's 30-35 employees, only lung counts and (irregularly) urinalyses. He also disputed the ability to put upper bounds on the neutron flux via reactors' energy output. Finally, he stated that in the 1980s, an estimated 100-200 non-CML RFP staff entered the lab annually to observe ongoing experiments. As a result, NIOSH agreed to revisit these issues, with a plan to also request additional data from Los Alamos National Laboratory, and report back to the group.

NIOSH interviewed additional people and collected data from previously unknown records in storage at Los Alamos National Laboratory (LANL) to address claimant and CML scientist concerns. NIOSH identified records of neutron flux and thermal power estimates by CML staff using analytical measurements made during or after criticality experiments and used these data and other data from the scientist's book to re-assess thermal power and fission rate estimates (43_dc-rfpirdcml-r0.pdf, pages 4-8). As a result of this reassessment, "NIOSH found that CML staff had on five occasions satisfactorily assessed thermal power and neutron flux, and the power in all cases was less than the 10 mW estimated in its 7/14/15 NIOSH White Paper." [2017_03_23 Board transcript_RF.pdf, page 49]

On the basis of its reassessment, NIOSH and SC&A reached the conclusions already stated above, in b).

In summary, the Panel concludes (a) that NIOSH's estimates of power and duration of criticality experiments are averages based on data from CML experiments recorded contemporaneously, (b) estimates of possible dose from resuspended contamination from spills are based on routine air monitoring, and extensive data are available, (c) NIOSH utilized information from numerous sources, including a CML scientist's publications, extensively in the determination of possible exposures, (d) the scientist's objections relate to external dose from gamma radiation, not internal dose, (e) external doses and internal intakes from all potential exposures at the CML, including to unmonitored personnel, can be bounded based on available monitoring data, (f) calculated levels of internal radiation exposure are claimant favorable, (g) the NIOSH analysis appears thorough, data-based, and claimant favorable, and (h) the detailed review carried out by SC&A supports NIOSH's analysis.

6. Plutonium and other radioactive materials in "cold area" buildings – Buildings 440, 444, and 460

The petitioners appear to raise two concerns in the Appeal Letter related to this topic: plutonium exposure and neutron exposure from beryllium and depleted uranium (DU). While the concern is listed as a bullet point on page 4 of the Appeal letter as "Plutonium and other radioactive materials in "cold area" buildings – Buildings 440, 444, and 460," the discussion of this issue on page 16 of the Appeal Letter is more narrow, and describes only "Neutron exposure to workers in Building 444." The petitioners advance no new evidence regarding plutonium in any building or neutron exposure in buildings 440 or 460.

The two concerns regarding building 444 are discussed separately:

Plutonium exposure (Appeal Letter, pages 16-17):

> As recently as June 12, 2017, plutonium was listed as being present at some point in Building 444. This was presented to DCAS and the Board before the Board meeting in March of 2017. DCAS has not responded whether their dose reconstruction methodology incorporates plutonium exposure for workers in Building 444.

Certain metals are known to have been present in building 444 (23_2005062800775ALL.pdf, page 3), including depleted uranium, depleted uranium alloys, aluminum, beryllium, stainless steel, copper, and other metals in minor amounts. This document does not mention the presence of plutonium in building 444. Conceivably, it could have been present in small amounts or in waste drums, as in building 460.

The petitioners' concern regarding the presence of plutonium in building 460 is not new. The Panel reviewed a number of documents related to this issue. DRQual_P0192_02082012.pdf, includes the following under the heading "(F.1) Radiation exposures and radiation doses potentially incurred by members of the proposed class were not monitored either through personal monitoring or through area monitoring:"

> Originally, the DOL Site Exposure Matrix showed that plutonium was present in Building 460. NIOSH was advised of this in the attached email dated December 8, 2009. According to the statement submitted in that email, a former radiation control technician related that waste drums from the 700 complex were stored in Building 460 in 1988 when the governor of Idaho refused to allow shipments

> of radioactive waste from Rocky Flats into the state. Building 460 was a 'cold' building and workers were not monitored for exposure to radiation. [Page 2.]

More specifically, as noted on page 1 of the same document, the petitioners' concern is clarified as, "The potential unmonitored dose from waste drums stored in Building 460 refers to the Building 460 workers' lack of bioassay monitoring."

The NIOSH response is in the same document, DRQual_P0192_02082012.pdf, on pages 2-3:

> NIOSH has exposure records for most workers. Some workers may not have been monitored if it was determined that their exposure potential was below the threshold for dose monitoring to be required. Work in Building 460 may not have required monitoring for workers assigned there. The affidavit regarding the stored drums describes the performance of radiological monitoring of those drums, and states that there were radiological postings due to the exposure rates from the drums. Additionally, records available to NIOSH indicate that the radiation control technician had plutonium bioassay during the period of concern. This indicates to NIOSH that radiological controls were being exercised to prevent unmonitored workers outside the posted areas from receiving exposures above appropriate limits. NIOSH does not see indications that the movement and storage of these drums was controlled differently than the general waste storage activities on site. The doses associated with general waste handling and storage activities are represented in the dose monitoring records of the RFP worker population. The adequacy of RFP worker population dose records for the development of coworker distributions for the assignment of unmonitored internal and external dose has already been evaluated by NIOSH and the ABRWH for SEC00030. [Emphasis added.]
>
> In NIOSH's view, this proposed basis support provides no substantially new information regarding unmonitored plutonium or uranium exposures, beyond what NIOSH has previously addressed in its evaluation for SEC00030.

The Panel concludes that if plutonium was present in building 444, it would have been in very small amounts or in waste drums, as in building 460. The Panel further concludes that in this regard NIOSH investigated the possibility of exposure from stored plutonium waste drums in building 460 adequately, and that the investigation methods, conclusions, and proposed use of exposure data from general waste handling and storage activities are acceptable. The method used to reconstruct exposure for building 460 workers would apply equally to building 444 workers potentially exposed to plutonium in waste drums. In addition, a neutron monitoring program was in place in building 444 (discussed in the section on beryllium and depleted uranium below).

Neutron exposure from beryllium and depleted uranium (DU) in building 444

In the Appeal Letter, page 17, the petitioners state:

> Another recent development was whether workers in Building 444 were monitored for neutron dose. This question arose when the petitioners realized that both beryllium and depleted uranium were present in that building.

The petitioners' concern regarding the possibility of neutron exposure to workers in building 444 from DU and beryllium (Be) is related to the production of neutrons when DU and Be are in close proximity. Attachment 4 to the Appeal Letter is an email from Mr. Rutherford in DCAS, who states (page 25 of 47) that "...it would take about 1,000 kg of DU in *intimate* contact with Be to give a dose rate of 1 mrem/hr at a meter." [Emphasis in original.]

Petitioner Barrie provided information about the physical location of the Be and DU in a presentation to the Rocky Flats Work Group at its February 9, 2017, meeting (67_wgtr020917.pdf, page 58):

> LaVon and I, last June, had a discussion about depleted uranium in Building 444. And I don't want to get into all of it, but he did explain to me that depleted uranium would need a catalyst to emit neutrons. And a worker told me that beryllium would act as a catalyst, and in the other side of Building 444, which was separated by a three-foot wall, was beryllium. So we had depleted uranium on one side and Be on the other side. [Emphasis added.]

If a three-foot wall separated the Be from the DU, as petitioner states, they could not have been in intimate contact. Additionally, in the same Work Group transcript, page 63, Mr. Rutherford states, "Building 444, ... neutron exposure from depleted uranium is not an issue. You don't have enough there."

Were Be and DU ever alloyed together at Rocky Flats? There is an extensive review of Be use at Rocky Flats in 23_2005062800775ALL.pdf. This review indicates that DU was not alloyed with Be at RFP, so no DU-Be alloy waste could have been generated in building 444 (23_2005062800775ALL.pdf, page 17).

23_2005062800775ALL.pdf includes a discussion of Be use in building 444 (page 21):

> Building 444 had a beryllium machine shop, a DU machine shop, and a foundry that accommodated both beryllium and depleted uranium. The waste generated by the machine shops was segregated, but foundry waste could be commingled. Although drums and boxes generated were not marked always as to their origin within Building 444, a commingled drum was always identified as a beryllium drum.

However, Be foundry operations ceased in 1975 (23_2005062800775ALL.pdf, page 6):

> Production of beryllium components began in 1957 and consisted of machining and inspection of beryllium forms supplied by offsite vendors. A wrought beryllium process was developed at RFP in the mid-1960s to recycle beryllium metal scrap into cast beryllium forms available for machining. While beryllium is not radioactive, it was often commingled with DU and other radioactive materials shipped to INL [Idaho National Laboratory].

> In 1975, offsite vendors began supplying beryllium blanks that required a minimal effort to machine into acceptable beryllium components. Consequently, the recycling and casting of beryllium at RFP ceased. The beryllium blanks provided by offsite vendors were composed of sintered beryllium, which contained 5–6% beryllium oxide. Eliminating the wrought process after 1975 significantly reduced the beryllium waste generated by Buildings 444, 447, and 883. [Emphasis added.]

Thus, although foundry waste could contain both Be and DU (though not as an alloy), there were no Be foundry operations after 1975. Moreover, the petitioners state (Appeal Letter, page 17) that, based on their review of the Comprehensive Epidemiologic Data Resource (CEDR) for Rocky Flats and their observation that data on neutron exposure were included in the CEDR, "It is obvious that there was some kind of [neutron] monitoring program for the workers in 444." The Panel determined that such monitoring would indicate whether these workers did have neutron exposure and would provide information that would permit estimation of their neutron exposure.

The Panel concludes that there is no evidence of Be alloyed with DU in building 444, and large quantities of Be and DU could not have been in intimate contact, or even in close proximity—the Be and DU machine shops were in separate parts of the building, separated by at least a three-foot wall. Therefore, there is no mechanism for neutron exposure to workers in building 444 as a result of the machining of Be and DU. Be and DU wastes were commingled in foundry waste containers before 1976. While it is conceivable that Be and DU could have been in intimate contact in waste containers and therefore neutron production might have occurred, there is no evidence that this occurred during the period 1984-2005, and there is evidence that a neutron monitoring program was in place in building 444. Further, NIOSH investigated the possibility of neutron exposure to workers in building 444 and found nothing to suggest that neutron exposure was a concern.

7. Magnesium/thorium alloy plates used in Building 440

The petitioners state (Appeal Letter, page 18) that:

> This issue originally arose from fourteen former workers from the Dow Madison Company who offered sworn affidavits that truckloads of this material was [sic] shipped to the Rocky Flats plant. DCAS, in 2007, suggested that the Dow workers were mistaken and that the shipments actually went to the Rocky Mountain Arsenal...
>
> One former Rocky Flats worker came forward in 2013 and alluded that special, classified materials were used in the Modification Center located in Building 440. The worker was willing to be interviewed in a classified setting, however, we do not know if this interview took place or what information this worker provided to DCAS...
>
> As noted above, DCAS admitted that there were approximately 400 boxes of documents located at LANL which might contain information on magnesium/thorium alloy plates usage at Rocky Flats. Yet, despite knowing of

these records for years, DCAS has yet to review them and doesn't plan to do so until January 2018.

The Panel reviewed a number of documents that dealt with magnesium/thorium alloy (hereafter "Mg-Th") plates. Joint_Email_Submission_From_Rocky_Flats_Plant_SEC-00192_Co-petitioners.pdf includes a redacted report of an interview with an individual identified only as a Rocky Flats worker. On page 6 of 7, the interviewee is reported as saying:

> You indicated that you had never heard of Magnesium-Thorium (Mg-Th) alloy and were not aware of the existence of any Mg-Th alloy at RFP-Modification Center. You were aware of 4x4 foot square crates being brought in that were marked as radioactive, but you were not aware of what the composition of the material was. We were under the impression this was annealed armor plates. We formed this material into various shape configurations by shearing, punching and bending. ...You informed us that you did not perform any welding on that material ... You indicated that the management told you that this material was not monitored because it was not radioactive; it was probably just coming from a radiologically controlled area.
>
> ...
>
> In your closing statements, you discussed a union concern regarding work with radioactive materials on Building 440, that you did not do any grinding in 440..." [Emphasis added.]

Note that in McKeel_EmailAttachment_Mag-Thor_At_RF_3.21.17.pdf, Dr. McKeel states (page 1) that Mg-Th plates were not 4 X 4 feet:

> magnesium-thorium metal alloys ('mag-thor') such as HK-31A and HM-21 were produced at the Dow Chemical Plant located in Madison, IL, were then shipped as large (~4 x 8-12 foot) sheets or plates to the DOE Rocky Flats plant in Jefferson Co., Colorado....

The document dc-rfpmgth-r1.pdf summarizes the review of this issue by NIOSH as part of the Rocky Flats and other investigations. Numerous records and sources were investigated, with the conclusions that (1) Mg-Th was only produced at Dow Chemical from 1954-1973, and (2) there are several worker statements that Mg-Th was never used at Rocky Flats:

> No corroborating evidence for the assertion that Mg-Th alloys were used or present at RFP was found during the research into Mg-Th alloy efforts in the DOE complex over the applicable time period. [page 2]
>
> While most of the information and documentation remains classified, the information that was released based on the reviews does not corroborate the use of Mg-Th alloys at RFP for this or any other operations. [page 7]
>
> All of the available information for Mg-Th alloys for other sites falls within the timeframe of the most recent proposed SEC class for RFP (1952-1983); therefore, if any undocumented Mg-Th operations did occur at RFP (that were responsive to these other sites' operations), the RFP operational dates would be covered under the existing RFP SEC class. [page 8]

The document 56_sca-rfpmgth-091114.pdf summarizes the review of this issue by SC&A. In 2006, SC&A raised the possibility of Mg-Th alloy being received by Rocky Flats during the review of the NIOSH Evaluation Report for Petition SEC-00030 (page 1):

> During this review, SC&A interviewed a Dow Madison worker who had claimed that shipments of Mg-Th alloy material were being sent to Rocky Flats during a 12-year period from 1963 to about 1975 (SC&A 2007b). The interviewee indicated that four truckloads of Mg-Th alloy were being shipped to RFP per month, and that the same material was being shipped to Los Alamos National Laboratory (LANL). Dow Madison also received scrap returns from the various Atomic Energy Commission (AEC) sites, including RFP, which was clearly labeled on the returns. The interviewee indicated that four Mg-Th alloys were involved: HK31, HK61, HM21, and HM31.
>
> At the Rocky Flats Work Group request, NIOSH subsequently interviewed four site experts from RFP regarding the degree of exchange of Mg-Th between RFP and Dow Madison, if any. As noted in NIOSH's August 13, 2014, paper (NIOSH 2014), the four experts interviewed did not recall any large quantities of magnesium alloy in use at RFP and did not recall any shipments of such material between RFP and Dow Madison. As the Work Group took no further action, NIOSH considered this issue closed.

The issue was raised again in 2013 for SEC-00192 (56_sca-rfpmgth-091114.pdf):

> The issue was raised again by the petitioner for the current SEC-00192 via e-mail on May 31, 2013, who indicated that a third party had reported that Mg-Th alloy plates had been brought to RFP, refined in Building 881, and then sent to the MOD center for modification to fit 'Semi Trucks' to make them bullet proof (NIOSH 2014). NIOSH has since conducted further records review of the Site Research Database (SRDB) to locate any documentation establishing a link between Mg-Th alloy and RFP, conducted new keyword searches of available RFP documents (e.g., using HK-31 and HK-31A, as key search parameters), performed additional onsite document searches, and interviewed additional former RFP workers, in particular, one who worked at the MOD center. None of these more recent investigations have surfaced new information which has led NIOSH to change its original conclusions from 2007 that there is no evidence of the use of Mg-Th alloy material at RFP. NIOSH opines that there is likely 'confusion between RFP and other Denver-area sites, as well as confusion regarding Mg-Th plates and other similar materials at RFP.' [Pages 1-2.]
>
> The Dow Madison worker interviewed by SC&A in 2007 provided a level of clarity and detail in his recollections of the Mg-Th alloy shipments between Dow Madison and RFP, which make it difficult to attribute his identification of RFP as the recipient as merely 'confusion' on his part. For example, the interviewee clearly identified that returned scrap was received from all recipient sites, with that of RFP being clearly labeled as such. [Page 2.]
>
> ...

> In his October 16, 2013, comments before the full Advisory Board in its meeting in Denver (McKeel 2013), Colorado, Dow co-petitioner Dan McKeel noted that he had made inquiries to the Department of Energy (DOE) via the Freedom of Information Act in May 2013 regarding Mg-Th use and had not yet heard anything. He was also told by DOE that about 400 boxes of records pertaining to RFP are located at LANL but would need to be searched by hand. He indicated that some of these records are classified and was told any such search would take about 2 years. Without accessing these records, any final conclusions regarding facility use and shipments of Mg-Th would be premature. [Page 2, emphasis added.]
>
> The reported Mg-Th use period for the AEC weapons complex (1956–1969, SRDB 53615) falls within the current SEC period for RFP (1952–1983) and, therefore, would only influence partial dose reconstructions. While the reported concentration of thorium in the alloy material (2%–3%) is relatively low, the dose contribution to workers, if they were involved with certain, intrusive handling of the material (e.g., grinding, smelting, or fabricating), could potentially be significant, as pointed out by SC&A in its 2007 review of NUREG -1717 and potential worker exposures from 4% thoriated welding rods. (SC&A 2007a). [Page 3, emphasis added.]
>
> In SC&A's judgment, the receipt and use of Mg-Th alloy material at RFP remains inconclusive, given the incompleteness of document searches and reviews, particularly of the apparent records collection identified at LANL. However, it is within the Work Group's purview to judge whether further investigation is warranted, given the uncertainty of corroborating evidence being uncovered, the subsuming scope of the current SEC period, and the resources that will be required to probe this issue further. [Page 3, emphasis added.]

The Mg-Th issue was discussed at the Work Group meeting on March 17, 2015, (31_wgtr031715.pdf):

> [Mr. Rutherford:] So some initial work ...found no corroborating evidence for the assertion that magnesium-thorium alloys were used or present at Rocky Flats
> ...
> And I actually interviewed Rocky Flats personnel to see if one of them were aware of the receipt of these types of materials, and none were aware that magnesium-thorium alloy was ever present or used in any significant quantity. [Page 30.]
>
> [quoting from an email received from a petitioner] 'You may remember that Dow workers submitted affidavits that Dow shipped these plates to Rocky Flats.' [Page 31.]
>
> ... we did additional interviews...I talked to a person that was at the Board meeting at the time who was involved in this. We set up classified interviews at the Denver records facility. We interviewed ...four to five workers that were directly associated with this work. [Pages 31-32.]

And we also went back, and we did additional data captures and research to see if we could find ... potential documentation that would show that magnesium-thorium alloy was used at the mod center. [Page 32.]

From that review, from the interviews of the workers, and from the review of documentation that we had there, we found no indication that magnesium-thorium alloy -- we had no corroborating evidence that it was used at Rocky Flats. But through that research we also identified that Sandia National Lab may have been involved in the process, since they were part of the design team, and putting together for the mod for the semi-trucks. [Page 32.]

So we went back to Sandia National Lab. We did a data capture search there as well. And, again, we found no information that supported that magnesium-thorium alloy was used at Rocky Flats. [Pages 32-33.]

[Mr. Fitzgerald:] ...we participated in the NIOSH data capture at the Legacy Management Complex in Denver, and I think all of us recognize that the set of records that Legacy Management had ... was incomplete. I would say significantly incomplete, because Los Alamos ...took quite a few Rocky Flats records, a lot of classified records that had relevance to the weapons program. [Page 35.]

And it is very possible that Rocky Flats, given the source terms they were dealing with, which, you know, plutonium, neptunium, and uranium, that mag-thorium probably almost didn't get on their screen. ...
So, in general, you know, we have not found much in the way of records for mag-thorium. Otherwise, this issue would have been gone years ago. We have had to rely on interviews of workers, mostly to discount the original input that we got that in fact Dow Madison has shipped it. And we haven't found any corroboration of that at all, so it sort of leaves us in this situation where we don't have any records per se, any clear-cut closure on the thing from that standpoint. [Pages 37-38.]

... we have talked to a lot of people, we have chased down a lot of leads. There may in fact be some additional records at Los Alamos to validate this. And, certainly, the history of mag-thorium use suggests that it is possible that there was an application at Rocky, but to date we have not been able to verify that. [Page 38.]

CHAIRMAN KOTELCHUCK: ...NIOSH -- its records search, its search, seemed to me pretty comprehensive. I was impressed at the number of different ways one approached trying to figure out if something was sent, transport, receipt, different ways, and they found nothing. It's hard to believe. If these are metal plates, right, that's -- somebody would have noticed metal plates coming in, and, as you noted, in fairly large weights, right, and sizes. [Pages 50-51.]

> CHAIRMAN KOTELCHUCK : ... I'm still impressed by SC&A's comment that you -- that there is really a chance that it really did happen ... we are still talking about something -- a material with two or three percent thorium. [Page 55.]
>
> CHAIRMAN KOTELCHUCK : ... Suppose it really happened. There is some credible evidence -- some evidence; I don't even say credible. if we're wrong, this is not likely to have resulted in exposures that would be -- highly affect the dose reconstruction for the individuals. [Page 58.][All emphasis added.]

An email from petitioner Barrie dated February 6, 2017, (58_barriemckeel020617.pdf) stated (page 2 of 7):

> Dr. Dan McKeel recently received new evidence via the FOIA process from unclassified notes of a secure phone interview that NIOSH/SC&A/ORAU conducted with a Rocky Flats worker...and shared the document with me. The worker interviewed is known to us.
>
> 1. The secure interview concerns the suspected use of large quantities of magnesium-thorium alloy metal plates at the Rocky Flats CO plant in Building 440 (Transport Modification Center or TMC). This worker had previously addressed the ABRWH in a Public Comment, stating he worked at the RF Mod Center... The worker requested the Board grant him a secure interview.
>
> 2. The worker testimony (Name redacted PA-cleared copy attached) from Dan McKeel's CDC FOIA 17-00140) is that he bolted plates of metal housed in 4 x 4 ft. wood boxes marked 'RADIOACTIVE MATERIAL' to railroad cars and semitrucks for shielding and or strengthening during his work in Building 440 (TMC). His supervisor stated the metal in the wood boxes was safe and was NOT radioactive (see discussion of HK-31 and HM-21 alloys in [4]). According to the interview notes, this process occurred at the Rocky Flats plant between ***1984 and 1989***. Additionally, the worker relayed in the interview that he was well acquainted with depleted uranium and its use in Building 440. It is logical to assume that unidentified material housed in 4 x 4 ft. wood boxes marked 'RADIOACTIVE MATERIAL' was not depleted uranium.
>
> 3. The worker's description in item [2] fits perfectly the extant literature and affidavit testimony of a dozen Dow Madison, IL workers who manufactured magnesium-thorium (2.5-4.0%) alloys HK-31 and HM-21 and shipped same to many military, commercial and DOE EEOICPA sites. In particular, they are 100% certain a major client was the Rocky Flats Plant on CO, where Dow Chemical was prime contractor from 1952 to 1975. The same Dow IL workers testified RF shipped Mg-thor scraps back to the Dow Madison IL site and remelted it. The workers cited the B-Mac and Anderson trucking companies as ones that shipped HK-31 Mg-thor alloy plates to RF. [Bolded and italicized text in original; other emphasis added.]

The transcript of the February 9, 2017, meeting of the Rocky Flats Work Group (59_wgtr020917.pdf) discussion of the Mg-Th issue repeats much of the discussion from the Work Group meeting on March 17, 2015, discusses the issues raised by petitioner's email of

February 6, 2017, and concludes that there is no new information that warrants reopening this issue:

> MR. RUTHERFORD: I want to point out that this is not a new interview, that was not as Dr. McKeel had indicated. This is an interview ... conducted in support of the White Papers that we developed...during our development of that report [dc-rfpmgth-r1.pdf] we asked for design documents. ... we went to Sandia. We went to a number of other organizations looking for additional information to look for magnesium-thorium alloy. We talked to the individuals there and we have found nothing that would support magnesium-thorium alloy being used at Rocky Flats, and we stand by that position at this time. [Pages 44-45.]
>
> [Chair Kotelchuck:] And the letter by Dr. McKeel and Ms. Barrie says that - it notes that ... certain NRC regulations exempt magnesium-thorium with less than 4 percent for use in commercial products such as lantern mantles and welding rods. And I certainly know that that is the case with lantern mantles, which I happen to have used ... that that level of radiation, certainly in the mantles, is not considered a high level and therefore it's perfectly okay to let people in the general public use it. And it's noted in the interview that this is considered a cold area. That is to say, the level of radiation is presumably low enough that people are not required to wear badges and that they can work there.
>
> So, this is...a situation where the amount of exposure is quite small and the work that's ... reported does not suggest a high degree of machining that would involve exposure to small - to dust or to materials from the machining. [Pages 48-49.]
>
> [Chair Kotelchuck:] So I don't see...that we should overturn...the decision that we made earlier to close this. [Page 49.]

At the March 23, 2017, meeting of the Advisory Board, Mr. Rutherford noted that some of the 400 boxes at LANL had, in fact, been searched (2017_03_23 Board transcript_RF.pdf):

> MR. RUTHERFORD: I would like to say that it's not 400 boxes. We have reviewed some of those boxes. When we went through the Rocky Flats early on in not only SEC-30, but SEC-192, we have been to LANL, we have captured documents and we have, you know, looked for this issue. I know we haven't looked in all of those boxes, but it's not 400 boxes. [Page 54.]
>
> MR. RUTHERFORD: Okay. I would like to point out another thing is we did look at the classified documents at LANL. That was the ones we focused on, because the operation was a classified operation. And so those were the documents we were specifically looking at at [sic] LANL. [Page 55.]

Mr. Rutherford also observed that thorium doses from the kinds of operations performed in building 440 can be reconstructed (2017_03_23 Board transcript_RF.pdf, page 54):

> MR. RUTHERFORD: And I'd also like to point out that, in our opinion, this is not an SEC issue. We can reconstruct the thorium exposures from cutting, grinding, welding, your two to four percent thorium alloy. And we've done this for a number of metals operations.

At the March 23, 2017, meeting of the Advisory Board, Mr. Kotelchuck summarized the reasons for the Working Group's decision not to ask NIOSH or SC&A to pursue the issue further and to close the issue (2017_03_23 Board transcript_RF.pdf, pages 37-38):

> And our reasons were the failure of intensive, year-long searches for documentation at the plant and agency levels. This had been going on since 2007. So, it was ten years of looking at data. And of course, once the issue was open, it was clear that both groups, had they seen anything that related to magnesium-thorium, would have so reported. So, the searches had failed to corroborate the reports from the Dow-Madison workers and...consideration of current limitations on NIOSH resources of staff, time and funding...we had to simply close this. I should note that the vast majority of cancers during the years of possible magnesium-thorium use are compensable under the existing SEC, which goes to 1983. So, only those with noncompensable cancers not in the SEC might be negatively affected by this.

In summary, the Panel finds that (a) NIOSH reviewed shipment records, receipt records, inventory records, and work processes and interviewed workers. No evidence of Mg-Th use was found. (b) Several hundred additional boxes of records exist at LANL, but not all have been searched. Searches of these records have largely been confined to classified records. (c) Fabrication of armor for the rail cars and semi-trailers did not involve grinding, smelting or welding, which could have produced vapor, dust or small particles, but only shearing, punching and bending. (d) As reported by the petitioners, the boxes of plates reported by the interviewee are different in size from the Mg-Th plates shipped by Dow-Madison, (4' x 4' vs. 4' x 8'-12'). (e) Thorium alloys with less than 4% Th are approved for use by the general public, including as welding rods, without any need for radiation monitoring. (f) The reported concentration of thorium in the alloy material (2%–4%) is relatively low, and any exposure to this material is not likely to have resulted in exposures that would have a substantial effect on dose reconstruction for individuals with non-presumptive cancers. (g) All the available information for Mg-Th for other sites occurred prior to 1984, so if any undocumented Mg-Th operations did occur at Rocky Flats related to other sites' operations, those exposures would be covered under the existing RFP SEC class.

The Panel agrees with SC&A that it is within the purview of the Working Group (and subsequently the Advisory Board) to judge whether further investigation is warranted, given the extensive nature of the search already conducted, that no evidence of Mg-Th use at Rocky Flats has been found, the work methods used to fabricate armor for the rail cars and semi-trailers, the uncertainty of any corroborating evidence being uncovered, the scope of the current SEC period, and the resources that would be required to probe this issue further.

8. DCAS failed to review relevant documents

The petitioners raise this issue regarding DCAS in the context of the "approximately 400 boxes of Rocky Flats documents in storage at Los Alamos National Laboratory" (Appeal

Letter, pages 4-5), and also with respect to an alleged statement by the Director of DOE's Office of Worker Screening and Compensation Support that LANL is the repository of more than 5,000 boxes of Rocky Flats documents that have not been reviewed. (Appeal Letter, page 5). This issue was raised by petitioners specifically with respect to the Mg-Th issue, and is discussed in point 7 with respect to Mg-Th. However, the petitioners also assert that it "affects every other issue raised." (Appeal Letter, page 4.)

With respect to issues 1–6, and as described further in those sections, the Panel's review of the record indicates that sufficient data and information are available in the records reviewed by NIOSH, SC&A, and the Advisory Board to permit (1) estimation of the maximum radiation dose for every type of cancer for which radiation doses are reconstructed that could have been incurred under plausible circumstances by any member of the class, or (2) estimation of the radiation doses of members of the class more precisely than a maximum dose estimate. It is the Panel's opinion that review of additional records stored at LANL would not likely result in a more claimant-favorable determination.

ADMINISTRATIVE REVIEW PANEL CONCLUSIONS

In our review of this case, we conclude that:

1. HHS substantially complied with the regulatory procedures set out in 42 CFR part 83;

2. The original determination contained no evidence of factual error and was supported by factually-accurate information; and

3. There were no errors of fact or in the methods of evaluation, or omission in the principal findings and recommendations of NIOSH and the Board.

SUMMARY AND RECOMMENDATION

Based upon our review of the administrative record in this case, this Panel believes that the regulatory procedures have been complied with, that credible sources of information have been used as allowed for under EEOICPA implementing regulations, 42 CFR parts 82 and 83, and that the Secretary, NIOSH, and the Board came to reasonable and appropriate conclusions. We conclude that the Secretary's prior decision was supported by factually accurate information, and that there were no errors of fact or omission in the principal findings and recommendations of NIOSH and the Board. We recommend no change to the determination to deny adding a class of workers at the Rocky Flats Plant for the time period from January 1, 1984, through December 31, 2005, to the SEC. The Administrative Review Panel has concluded that the petitioners' challenge is without merit.

Respectfully submitted,

Donald L. Miller -S 2019.04.04 09:55:45 -04'00'

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Attachment:
Petitioner's Appeal Letter dated December 8, 2017 (without attachments)

DEC 18 2017

Charles Saunders
Rocky Flats SEC Petitioner
[redacted]

Terrie Barrie
Rocky Flats SEC Co-Petitioner
[redacted]

December 8, 2017

Ann Agnew
Executive Secretary to the Department of Health and Human Services
Room 603-H
200 Independence Avenue, S.W.
Washington, DC 20201

Subject: Request for Administrative Review of the denial of Rocky Flats Special Exposure Cohort Petition 0192

Dear Ms. Agnew:

I, Charles Saunders, Special Exposure Cohort (SEC) petitioner for the Rocky Flats site and Terrie Barrie, co-petitioner respectfully requests a full review of the Advisory Board on Radiation and Worker Health's (Board) decision to deny expanding the SEC years for the Rocky Flats facility beyond December 31, 1983.

On May 8, 2017, the Advisory Board on Radiation and Worker Health (Board) agreed with DCAS's assessment in a close vote (8 to 5 with two abstentions).

On November 16, 2017, Acting Secretary, Eric D. Hargan, determined that, based on documents provided by the National Institute for Occupational Safety and Health's Division of Compensation and Analysis Support (DCAS), that DCAS has sufficient data to reconstruct dose for the Rocky Flats Workers after December 31, 1983.

We object to this decision and respectfully request that this decision be reversed and SEC status be awarded to all claimants from Rocky Flats employed after December 31, 1983. As will be shown below, we submit that DCAS failed to uphold their primary responsibility under the Energy Employees Occupational Illness Compensation Act of 2000, as amended (EEOICPA) and their own regulations. DCAS also violated the mandates of the Administrative Procedures Act (APA) by ignoring evidence and misleading the Board and the Acting Secretary on the facts of the petition.

Applicable Laws

When DCAS investigates the merits of an SEC petition they are governed by two federal statutes and two federal regulations. In the following discussion we will show that DCAS has violated these statutes and regulations.

1. Section 7384 (d) (b) explains the purpose of EEOICPA,

> *(b) PURPOSE OF PROGRAM—The purpose of the compensation program is to provide for timely, uniform, and adequate compensation of covered employees and, where applicable, survivors of such employees, suffering from illnesses incurred by such employees in the performance of duty for the Department of Energy and certain of its contractors and subcontractors.* (Emphasis added)

Additionally, Section 7384q (3) (b) of the EEOICPA, states,

> *DESIGNATION OF ADDITIONAL MEMBERS—Subject to the provisions of section 7384l(14) (C) of this title, the members of a class of employees at a Department of Energy facility, or at an atomic weapons employer facility, may be treated as members of the Special Exposure Cohort for purposes of the compensation program if the President, upon recommendation of the Advisory Board on Radiation and Worker Health, determines that—*

(1) it is not feasible to estimate with sufficient accuracy the radiation dose that the class received; and
(2) there is a reasonable likelihood that such radiation dose may have endangered the health of members of the class. (emphasis added).

2. DCAS is charged with the development of dose reconstruction methodology under EEOICPA. Under the Final Rule, it is DCAS' responsibility to determine whether,

> *"...it has access to sufficient information to estimate the maximum radiation dose, for every type of cancer for which radiation doses are reconstructed, that could have been incurred in plausible circumstances by any member of the class, or if NIOSH has established that it has access to sufficient information to estimate the radiation doses of members of the class more precisely than an estimate of the maximum radiation dose. NIOSH must also determine that it has information regarding monitoring, source, source term, or process from the site where the employees worked to serve as the basis for a dose reconstruction. This basis requirement does not limit NIOSH to using only or primarily information from the site where the employee worked, but a dose reconstruction must, as a starting point, be based on some information from the site where the employee worked."* (Emphasis added)

3. The APA places certain responsibilities on federal agencies when adjudicating claims. We assert that petitioning for a site to be included in the SEC, while more complicated, is nothing more than an individual filing a claim for compensation. DCAS is bound to obey the adjudication process under the APA. Otherwise DCAS's conclusions could be considered to be arbitrary and capricious under 5 USC 5 if DCAS,

> *[1] has relied on factors which Congress has not intended it to consider, [2] entirely failed to consider an important aspect of the problem, [3] offered an explanation for its decision that runs counter to the evidence before the agency, or [4] is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.*

4. 42 CFR 83, Procedures for Designating Classes of Employees as Members of the Special Exposure Cohort Under EEOICPA states that an appeal can be submitted if, "substantial factual errors or substantial errors in the implementation of the rules" can be established.

Issues Petitioners Raised but Were Unresolved or Inappropriately Dismissed

During the course of the SEC petition investigation, we identified specific issues where we felt that DCAS could not reconstruct dose with sufficient accuracy because monitoring records were inadequate, faulty or non-existent. We also provided documents to support our position and, in some cases, facilitated classified interviews with former workers who had first had knowledge of the situation. Those issue are:

- Large Cobalt 60 source – Building 779 and site wide
- Metal Tritides – Site Wide
- Safety concerns including the possible criticality in the year 1986 and falsification of records.
- Neptunium – Site Wide
- Critical Mass Lab (CML) – Building 886
- Plutonium and other radioactive materials in "cold area" buildings – Buildings 440, 444, and 460.
- Magnesium/thorium alloy plates used in Building 440

These issues are discussed in detail further in this request for review. We will also explain our contention that DCAS misled the Working Group and the Board itself on these issues.

DCAS Failed to Review Relevant Documents

While this issue arose before the vote on the petition by the full board, we lead with it because it affects every other issue raised.

On March 23, 2017 Dr. David Kottelchuck, the Rocky Flats Workgroup (WG) Chair, acknowledged that DCAS had located approximately 400 boxes of Rocky Flats documents in

storage at Los Alamos National Laboratory, but did not review them. Please see pages 36 and 37 of the following report
https://www.cdc.gov/niosh/ocas/pdfs/abrwh/2017/tr032317.pdf.

> *Two years ago on 3/17/15, the Working Group decided not to ask NIOSH or SC&A to pursue this issue further and to close the issue. And our reasons were the failure of intensive, year-long searches for documentation at the plant and agency levels. This had been going on since 2007. So, it was ten years of looking at data.*

Additionally, it is our understanding that it *is* DCAS's intent to review those boxes, when resources become available, but *only* for documentation related to the presence of magnesium/thorium alloy plates in Building 440. It is our opinion that there very well could be records which would support the petitioners' position on many issues. For instance, there could very well be a follow-up report on the possible criticality in 1986 or more detailed information on tritium production and storage.

While the idea of 400 boxes sitting in storage without review is disconcerting enough, the Director of DOE's Office of Worker Screening and Compensation Support on August 23, 2017 informed the co-petitioner, Terrie Barrie, that LANL is the repository of over ***5,000*** boxes of Rocky Flats documents, which have languished without review. Ms. Barrie referred to the thousands of boxes of Rocky Flats documents that have yet to be reviewed by DCAS in her public comments that night.

Page 307 https://www.cdc.gov/niosh/ocas/pdfs/abrwh/2017/tr082317-508.pdf

Subsequent private conversations with two Work Group members confirmed that they were unaware of the amount of documents which were not reviewed by DCAS.

Because then-Secretary Price did not make a decision on the Board's recommendation, we faxed the attached letter (Attachment 1) to him on September 11, 2017. We asked him to reject the Board's recommendation and award SEC status to all workers at Rocky Flats after December 31, 1983 "...because of DCAS's negligence in reviewing all of the evidence."

This letter should be considered as part of the administrative record and reviewable by the panel. This should not be considered "new" evidence. While it is true that this information that there were 5,000 boxes of document provided by DOE was not relayed to the Board or the Rocky Flats Work Group during the petition's deliberations, this information ***was*** relayed to the Secretary's office prior to the Secretary making a decision on the petition. We not only faxed the letter before the Secretary made a decision but we also, on October 3, 2017, asked that the letter be posted to the NIOSH Docket 032 (Attachment 2). More than two months have passed and this letter has yet to be posted to the NIOSH Docket.

Please note that on June 19, 2017 a Freedom of Information Act (FOIA) request was submitted by the co-petitioner requesting the unclassified indices of the 400 boxes provided to DCAS by the Los Alamos National Lab. Those documents have not yet been released by DOE. In addition, Dr. Daniel McKeel, Jr., MD, co-petitioner for Dow Madison SEC petition 0079, filed a similar request with the National Nuclear Safety Administration. (Attachment 6)

DCAS's failure to research these aforementioned documents, despite knowing of their existence for many years, and routine dismissal of specific issues raised, demonstrates that science behind this program is not based on a thorough review of records. Therefore, the efficacy of their dose reconstruction methodology for former Rocky Flats workers will be questionable, depending on the size of any one box and how full the boxes are, there are potentially millions of documents that have not been analyzed.

It is quite possible that in the trove of documents there is ***at least one***, and likely more, pieces of paper that confirms that magnesium thorium alloy plates were used in Building 440 to modify the rail cars and truck transports. It's possible there is ***at least one*** document that explains why plutonium or other radioactive materials were present in the *"cold"* buildings of 444 and 460.

It's possible there is ***at least one*** document providing evidence that metal tritides were present at Rocky Flats after December 31, 1983. These possibilities are not dreamed up to keep this petition alive; these possibilities are supported by worker interviews and testimony as to being factual, to which DCAS routinely has responded with an institutional bias, wrongdoing, and arrogance which dismissed hard evidence and discredited testimony from site experts, including a senior scientist, who were hands on at Rocky Flats.

NIOSH is knowingly creating dose reconstruction models based on incomplete information, which is likely to result in an inaccurate characterization of working conditions at the site. Thus, all subsequent technical basis documents fall victim to the "garbage in, garbage out" principle. Depending on the size, quantity and quality of each box's contents, it is reasonable to assume that facility information exists to challenge NIOSH's rejection of the SEC. By rejecting the SEC without reviewing facility information, NIOSH has abandoned its obligation to claimant favorability. When the purpose of the SEC classification is to acknowledge absence of sufficient data, a decision to ignore 5,000 boxes of data that may influence the application and outcome of dose reconstruction in and of itself becomes grounds to establish the SEC.

The APA states that a federal agency's decision is made in an arbitrary and capricious manner if that decision,

> "...relied on factors which Congress has not intended it to consider, [2] entirely failed to consider an important aspect of the problem, [3] offered an explanation for its decision that runs counter to the evidence before the agency, or [4] is so implausible that it could not be ascribed to a difference in view or the product of agency expertise."
>
> DCAS "entirely failed to consider an important aspect of the problem" by not reviewing the thousands of boxes. DCAS is aware that thousands of boxes full of documents may provide a more robust understanding of the Rocky Flats plant. DCAS failed to evaluate these documents and failed to provide a complete assessment of the evidence to the Work Group and the Board.

Pattern of Institutional Bias and Wrongdoing

After the Rocky Flats SEC petition 0030 was decided on October 3 2007, the co-petitioner filed a Freedom of Information Act Request (FOIA) for all emails related to that debate. A selected group of emails can be found near the bottom of this page, "Emails obtained through FOIA Request", redacted pursuant to 42 CFR 83.18(a)

For background, SEC petition 0192 was filed on August 23, 2011. DCAS qualified this petition because methodology for tritium exposure was not developed. The original Evaluation Report (ER) was issued on September 5, 2012 which determined that DCAS had sufficient data to reconstruct dose for tritium exposure.

It was discovered, through the documents obtained through the FOIA request, that relevant information was withheld from the Board's Rocky Flats Work Group, specifically, the number of thorium strikes performed at Rocky Flats during. This was first brought to the Board's attention on September 18, 2012.

Page 338 https://www.cdc.gov/niosh/ocas/pdfs/abrwh/2012/tr091812.pdf Also see attached Power Point Presentation to the Board (Attachment 3)

The revelation that vital information was withheld from the Board was not acted upon by either the Board or DCAS. Because of this inaction, the Alliance of Nuclear Worker Advocacy Groups (ANWAG) filed a complaint with the Health and Human Services' Inspector General on February 18, 2013. redacted pursuant to 42 CFR 83.18(a)

Subsequently and, possibly coincidentally, DCAS revised the ER on September 20, 2013 and determined that DCAS cannot reconstruct dose for thorium, U233 and neptunium exposures through December 31, 1983. DCAS admitted that they did make a mistake about the number of thorium strikes they relied on for Petition 0030.

The above information is relevant because it appears that DCAS was also not forthcoming with the Work Group or Board during this year's deliberations. We are not saying that DCAS deliberately withheld information from the Board. However, there were factual misrepresentations especially during the deliberations this year which probably swayed the Board's majority and even Acting Secretary Hargan. The most obvious misreprensentation(s): classified interview regarding the Cobalt 60 source exposures; that exposure to metal tritides was ***decided*** during Petition 0030; that radiation exposure in the "cold buildings" was ***decided*** during Petition 0030; and all safety concerns were ***decided*** during the Petition 0030 deliberations.

The Cobalt 60 Source

DCAS provided an incorrect response to the Board regarding a classified interview that was to take place concerning the large Cobalt 60 source.

During the February 9, 2017 Work Group meeting, DCAS informed the Chair that the current custodian of the source had information on exposures that could only be relayed in a classified interview.

Page 27 2/9/17 transcript.

> MR. RUTHERFORD: Okay. Now, I do have to say during that - during our interview with the source custodian, the person indicated that they were a [identifying information redacted] and that they had other exposure concerns that they could not discuss over the phone. Given the status of this petition evaluation I thought it was - you know, we - and I discussed this with both Stu and Jim and we felt it was important to conduct this interview. So we are currently working on setting up a classified - or a secure interview and we would like to have a cleared Work Group Member and SC&A present for the interview as well.

The co-petitioner inquired whether a classified interview was held with the custodian before this meeting. The co-petitioner did not receive a response, however, Member Kotelchuck followed up with this question from the March 23, 2017 meeting:

https://www.cdc.gov/niosh/ocas/pdfs/abrwh/2017/tr032317.pdf

> Page 76 MEMBER KOTELCHUCK: Yeah, I mean, if I may say, on the cobalt-60, the assertion is that may say, on the cobalt-60, the assertion is that we didn't interview someone.

DCAS's responded with a summary of a completely different, and unrelated, classified interview. It appears that this interview was conducted with a former Rocky Flats employee years before.

> MR. RUTHERFORD: Actually, the cobalt-60 source, the person did request an interview. That interview was conducted in a classified setting. The individual was not concerned with Cobalt-60. She was concerned with a tritium capture system that was employed during the production years. She did not identify any situation where exposures could have been received from work with that unit. I can't discuss all of it, but I can give you that much. But, in fact, her interview said she had no issues with the cobalt gamma cell. It was routinely surveyed. We could only come up with two or three of the leak checks, but we did find the complete work package for the removal of the gamma cell and we had no indications there was ever any problems with that.

Even if this was an honest mistake and Mr. Rutherford confused a completed classified interview with a former Rocky Flats employee with the proposed interview with the custodian of the Cobalt-60 source, this response misled the Board to assume the classified interview concerning additional exposures from the source was completed and nothing relevant was discovered. We still do not know what exposure concerns the custodian has.

Metal Tritides

DCAS reported during the March 23, 2017 meeting that they assessed the presence of metal tritides at Rocky Flats.

> Page 75 Metal tritides, we actually assessed the metal tritide issue. I actually did get the documents from Terrie. The only period where we initially thought there could possibly be was the mid-'70s time era when some activities were going on. However, when we did classified search on that and discussions, we concluded that this was not a concern during that period. And so we have assessed that and it was reported to the Work Group. And we also gave SC&A the opportunity to rebut that.

We have no recollection of verbal report nor did we locate a white paper on the presence of metal tritides. In fact, we only learned of the possibility that metal tritides could have been at Rocky Flats on March 17, 2015, when Sanford Cohen and Associates made this comment,

Page 188, https://www.cdc.gov/niosh/ocas/pdfs/abrwh/2015/wgtr031715.pdf

> "...some language that appears that there was some metal tritides associated with what was handled at the facility. And, of course, as we know, metal tritides are a lot different than tritiated water or elemental tritium. And I'd like to hear a little bit more about tritides and how that fits into this idea that really other than the 1984 — I'm sorry, the August 1974 incident, how does that play out, he idea that some of this might have been tritides?"

DCAS acknowledges that tritium was present at Rocky Flats during its entire operation, yet they only investigated the presence of tritides during the mid-1970s. DCAS failed to thoroughly investigate the presence of tritides at Rocky Flats after December 31, 1983. They ignored a document provided by Jon Lipsky, former FBI agent who led the raid on Rocky Flats. This was an interview conducted on June 11, 1991 and provided to NIOSH. The former worker, who was a chemical engineer, stated, "the tritium site was separate. Due to the ongoing practice of conducting Classified Projects at Rocky Flats, tritium was ***produced*** and disposed of at the plant, in the area of the 207 ponds." (Emphasis added)

A criminal charge can be filed against a person who provides false information to the FBI. Both DCAS and the Board chose to overlook this important document. The assumption for dose

assignment for tritium exposure is based upon the 1973 incident. DCAS failed to further investigate whether there was an ongoing process of tritium production, storage (which could be the creation of metal tritides) and disposal.

It also sheds a new light on the March 21, 2006 email shown on slide 3 of the petitioners' September 18, 2012 Power Point Presentation. DCAS obviously had some information about tritium stripping. In redacted pursuant to 42 CFR 83.18(a)

redacted pursuant to 42 CFR 83.18(a)

The explanation given much later was that this was probably a typo and that the process was, in fact, "titanium stripping."

However, this argument no longer holds water. DCAS would not be interested in titanium. Their only concern is radioactive materials. There would be no need for the author of the email to make an inquiry for titanium stripping. It makes perfect sense to ask for more information on tritium stripping. And obviously, this process was confirmed before the ER of April 7, 2006 was issued.

DCAS failed to fully research the issue of whether metal tritides were present at Rocky Flats. To the best of our knowledge, the did not report their findings to the Work Group, Board or to the petitioners. This violates the Final Rule because despite having information on tritium storage and stripping they neglected to identify the process, duration and location. DCAS also violated the APA because DCAS ignored the evidence before them and did not adequately address the petitioners' concern.

Safety Concerns/Record falsification/Record destruction

Two issues that will permit a group of workers to be included in an SEC is evidence of falsification of records and destruction of records. The petitioners provided evidence of both.

DCAS asserts that Local 8031's safety concerns were fully reviewed and closed out in 2007. However, we would like to point out that the safety concerns discussed in 2007 did not include the possible criticality which occurred in 1986, redacted pursuant to 42 CFR 83.18(a)

If there was a criticality in 1986 and ignored by DCAS, then it is likely that the methodology to reconstruct dose is woefully underestimated. Likewise, it is likely that if the plutonium weights were falsified, it would not be a stretch to conclude that dosimetry records for that incident were also altered.

Several workers provided examples of dosimetry documents that showed cross-outs and white-outs. One worker had a classified interview which she related that a grievance was filed by the Local concerning using a pencil to record dose.

The petitioners provided a Department of Energy (DOE) document concerning the destruction of records. That document was confirmed to be originated by DOE,

redacted pursuant to 42 CFR 83.18(a)

"April 25, 1996 — A moratorium was placed on the destruction of all records at the Site, including records located at the Denver Federal Record Center. No destruction would take place of any records unless approved by the RFFO Chief Counsel."

In addition, a former worker came forward and testified before the full Board that she destroyed records under orders from her superiors. The worker also agreed to be interviewed in a classified setting.

As is common with DCAS, when it comes to worker testimony (similar to how they treated the sworn affidavits from Dow Madison concerning magnesium/thorium alloy plate shipments to Rocky Flats), DCAS rejected these two former workers account and explained away their knowledge of the practices at Rocky Flats.

Neptunium

The Evaluation Report issued on September 9, 2012 stated that neptunium was handled in small quantities at Rocky Flats. An internet search provided a document which showed that there was a process for neptunium production. This document was provided to DCAS and the Work Group on February 26, 2013, eight days after ANWAG submitted their complaint to the Health and Human Services Inspector General.

Again, seven months after the submission of the DOE document, DCAS determined they were unable to reconstruct dose with sufficient accuracy for neptunium exposure prior to January 1, 1984. This was accepted by the Board.

The assertion that DCAS can reconstruct dose for workers after December 31, 1983 is based on the premise that they can use plutonium bioassay data for this purpose. DCAS had plutonium bioassay results prior to December 31, 1983. If those records were not sufficient then, why are they now sufficient after that date? According to a 2005 DOE document, "Inspection of Environment, Safety and Health Programs at the Los Alamos National Laboratory" DOE determined that plutonium bioassay cannot be used to reconstruct neptunium exposure.

Critical Mass Lab (CML) -Building 886

A few months before the March 23, 2017 meeting, DCAS released their final white paper on the Critical Mass Laboratory, Building 886.

The petitioners consulted with Dr. Robert Rothe, the senior scientist at the CML. He participated in a number of meetings and was interviewed by NIOSH. He voiced a number of concerns with the November 2016 white paper, "Reassessment of Internal Radiation Dose from Sources at the Rocky Flats Critical Mass Laboratory". For instance, NIOSH focused only on HEUN. He reminded us that CML also had 375 kg of very old Pu because it was rich in Am-241. He also explained that workers would have been exposed to HEUN when there were no experiments being conducted. He said that the CML staff was required to inventory HEUN "which would have exposed workers to 4 months of daily hands on contact with irradiated radioactive material." He also questioned NIOSH's assumption that the average experiment lasted 70 minutes. He believes this is a low estimate. He contends that about 15 to 20 minutes would be devoted to the "slightly super and slightly subcritical conditions" alone. It would not have been safe to just ramp it up to just below criticality too fast. He also recalls a few experiments which were "intentionally kept at or near criticality for hours."

It is important that the panel reviews additional objections to DCAS's assessment of the ability to reconstruct dose for the CML posted to the NIOSH docket, https://www.cdc.gov/niosh/ocas/pdfs/d32/carroll-043017-1.pdf

More importantly, page 30 of the November 2016 white paper, "Reassessment of Internal Radiation Dose from Sources at the Rocky Flats Plant Critical Mass Laboratory", https://www.cdc.gov/niosh/ocas/pdfs/dps/dc-rfpirdcml-r0.pdf, states,

> *"However, NIOSH has found no indication that confirmatory bioassays were performed for employees involved in the clean-up of any of the accidental UNH spills. Fission and activation products, which decay primarily by beta/gamma emission, are not likely in any*

case to have been detected by bioassay intended to detect alpha particles emitted by uranium or transuranic radionuclides."

The Final Rule demands that DCAS, ""...has access to sufficient information to estimate the maximum radiation dose, for every type of cancer for which radiation doses are reconstructed, that could have been incurred in plausible circumstances by any member of the class."

DCAS failed to obtain the most basic evidence to substantiate that adequate documents are available to reconstruct dose for the workers who cleaned up spills in Building 886.

The petitioners question why NIOSH was unable to locate bioassay for these workers. Was the bioassay protocol violated? Did Building 123, the dosimetry lab, misplace the urine and fecal samples? Were the bioassay records destroyed? And, if fission and activation products can't be detected by bioassay, how does NIOSH plan to reconstruct dose for beta/gamma exposures for these workers?

These questions remain unanswered. And because they are, DCAS has violated the Final Rule as mentioned above.

Neutron exposure to workers in Building 444

Since 2009, the petitioners have raised the concern that radioactive materials were present in non-radiological buildings. This stems from the Department of Labor's Site Exposure Matrix (SEM) which lists the thousands of toxic substances, by building, in this data base. SEM was developed using approved DOE documents.

As recently as June 12, 2017, plutonium was listed as being present at some point in Building 444. This was presented to DCAS and the Board before the Board meeting in March of 2017. DCAS has not responded whether their dose reconstruction methodology incorporates plutonium exposure for workers in Building 444.

Another recent development was whether workers in Building 444 were monitored for neutron dose. This question arose when the petitioners realized that both beryllium and depleted uranium were present in that building.

The petitioners reviewed the National Institute for Occupational Safety and Health's (NIOSH) document, "Health Hazard Evaluation Report No. 96-0198-2651 authored by John Cardarelli, II, M.S., and asked whether it applied to Rocky Flats Building 444, since that is where the majority of the depleted uranium was located. The Cardarelli report states, "For example, an equal number of neutrons can be produced with either a large amount of low-enriched or depleted uranium (238U) or a small amount of highly enriched uranium (235U)." We wondered, at the time of our inquiry, whether workers in Building 444 were monitored for neutron exposure.

DCAS responded in an email to the Work Group on 3/10/2017 (Attachment 4). DCAS stated, "A search of the Site Research Database (SRDB) has found no documents indicating that there was a neutron monitoring program in Rocky Flats Building 444." They also stated that they located a little more than 60 documents in the SRDB related to Building 444 but none were relevant.

An advocate for this program reviewed the Comprehensive Epidemiologic Data Resource (CEDR) for Rocky Flats. Her analysis shows 874 records for workers who were monitored and had neutron exposure between 1984 and 1989. At least 64 of those records showed 100 mr or more of neutron exposure. It is obvious that there was some kind of monitoring program for the workers in 444. (Attachment 5 provided to the Board March 23, 2017)

DCAS's email of 3/10/17 also states, ***"Therefore, it would take about 1,000 kg of DU in intimate contact with Be to give a dose rate of 1 mrem/hr at a meter."***

Rocky Flats had an annual inventory of over 300 metric tons of DU between 1984 and 1988, with three of those years exceeding 400 metric tons annually. The petitioners believe that it was likely that at least 1,000 kg of DU was present on any given day.

redacted pursuant to 42 CFR 83.18(a)

It is our opinion that DCAS glossed over this evidence, too, because it did not fit in with their accepted dose reconstruction methodology. Again, violating the Final Rules and APA.

Magnesium/Thorium Alloy Plates

This is another long-standing issue that has yet to be resolved satisfactorily. This issue originally arose from fourteen former workers from the Dow Madison Company who offered sworn affidavits that truckloads of this material was shipped to the Rocky Flats plant. DCAS, in 2007, suggested that the Dow workers were mistaken and that the shipments actually went to the Rocky Mountain Arsenal redacted pursuant to 42 CFR 83.18(a)

One former Rocky Flats worker came forward in 2013 and alluded that special, classified materials were used in the Modification Center located in Building 440. The worker was willing to be interviewed in a classified setting, however, we do not know if this interview took place or what information this worker provided to DCAS. Please see details in Attachment 6 as provided by Dr. Daniel McKeel, Jr., MD, co-petitioner for Dow Madison SEC petition 0079. This information was provided to the Board on March 21, 2017 prior to the Board's decision on March 23, 2017 to deny expanding the SEC years for Rocky Flats.

As noted above, DCAS admitted that there were approximately 400 boxes of documents located at LANL which might contain information on magnesium/thorium alloy plates usage at Rocky Flats. Yet, despite knowing of these records for years, DCAS has yet to review them and doesn't plan to do so until January 2018.

Additional Evidence of Ignored or Rejected Documentation

Former Rocky Flats workers advised NIOSH and the Board during both SEC petition discussions about inadequate air monitoring and reading of dosimetry badges. We provided DCAS and the Board during the evaluation of the 0192 petition numerous documents from government agencies including the Government Accountability Office and the Defense Nuclear Facilities Safety Board confirming the 0030 petitions and the former workers' testimonies that

the Rocky Flats monitoring programs which were intended to protect the workers were deficient and inadequate, https://www.cdc.gov/niosh/ocas/pdfs/d32/barrie071813.pdf.

The former FBI agent who led the raid on Rocky Flats in 1989 provided numerous documents to NIOSH. He explained, in an email to NIOSH dated (Attachment 7) that,

> *The document in question was released to the public through the hearing held in 1992 by Subcommittee on Investigations and Oversight of the Committee on Science, Space, and Technology (Chairman Howard Wolpe), U.S. House of Representatives, One Hundred Second Congress, Second Session which resulted in the report entitled Environmental Crimes at the Rocky Flats Nuclear Weapons Facility.*

In addition to FBI interviews, the former FBI agent provided other documentation to support the SEC petition. Dominic Sanchini was the President of Rocky Flats from 1986 and through the time of the raid. He kept a contemporaneously written diary on the day-to-day activities at the plant. Excerpts of this hand-written diary which supported our position were provided to NIOSH.

redacted pursuant to 42 CFR 83.18(a)

The documentation was obtained from government sources yet, inexplicitly, this and other evidence located in the Site Research Data Base has been ignored by DCAS and the Board.

We strongly recommend that the panel review every meeting where the Rocky Flats workers provided comments and documentation to the Board.

Summary

Acting Secretary Hargan detailed seven Findings on which he based his decision to deny expanding the SEC years for Rocky Flats claimants. Below is our response to the first five Findings.

1. "The potential sources of internal radiation that NIOSH investigated during its evaluation of the proposed class included exposures to tritium, neptunium, thorium, uranium-233, and fission and activation products of the Critical Mass Laboratory (CML). The modes of exposure for the radionuclides of concern were ingestion and inhalation."

Petitioners' response: DCAS neglected to inform the Acting Secretary that they also investigated Cobalt-60 and magnesium/thorium alloy plates. Because DCAS failed to investigate the thousands of boxes of documents located at LANL, these two issues have not yet been resolved.

2. "NIOSH concluded that tritium doses from the on-site, environmental release in 1973 can be reconstructed using the bioassay results collected after the release. Bioassay results from potentially exposed individuals can be used to reconstruct their tritium doses for the time period from January 1, 1974, through December 31, 2005."

Petitioners' response: DCAS was aware of the petitioners' issues of the presence of metal trititdes and on-site production and storage of tritium. DCAS failed to fully explore these issues. It failed to review the thousands of documents located at LANL to determine whether those documents would provide a better understanding of the presence of tritium at Rocky Flats. Therefore, it is impossible to tell if their dose reconstruction methodology for tritium exposure is sufficiently accurate.

3. "Likewise, NIOSH concluded that doses from fission and activation products at the CML can be reconstructed using workplace air monitoring results coupled with information about the power level and duration of CML experiments."

Petitioners' response: DCAS completely ignored Dr. Robert Rothe's testimony and oral history of the experiments which were conducted in CML. DCAS normally substantiates the majority of their dose reconstruction methodology for Rocky Flats based solely on bioassay results. For those exposures which do not have bioassay information, SEC status was granted (neutron, neptunium, thorium and uranium-233 exposures, e.g.). Yet, for CML, DCAS asserts that the limited air monitoring documentation (page 24, https://www.cdc.gov/niosh/ocas/pdfs/dps/dc-rfpirdcml-r0.pdf) is sufficient to reconstruct dose for the exotic fission and activation products produced during criticality experiments performed

by CML between December 31, 1983 and the last day radionuclides were present in Building 886.

4. "The principal sources of external radiation doses for members of the proposed class were evaluated in the SEC-00030 RFP evaluation report. SEC-00030 concluded that all external doses except those for neutrons could be estimated with sufficient accuracy. Therefore, with respect to SEC-00192, NIOSH concluded that there is no need to again assess external exposures and dose reconstruction feasibility at RFP.

Petitioners' response: Cobalt-60 is a gamma emitter. Questions remain about the other exposures the source custodian offered to share with DCAS. We also raised whether neutron dose is assigned to workers in building 444, where tons of depleted uranium and the fact that plutonium was present.

5. "NIOSH also concluded that operations that posed significant potential for internal and external exposure to neptunium, thorium, and uranium-233 had ended by December 31, 1983. Consequently, there is no need to reconstruct dose for the time period."

Petitioners' response: This is not accurate. DCAS, in fact, identified one additional operation after December 31, 1983. DCAS also asserts that they can capture neptunium exposure through plutonium bioassay. We supplied a 2005 DOE document, "Inspection of Environment, Safety and Health Programs at the Los Alamos National Laboratory" where on Page 37, DOE found that "Standard plutonium controls, such as plutonium bioassays, would not be adequate for neptunium but were not evaluated and/or modified for this operation." The panel should also note that the SEC petition for the Los Alamos National Laboratory was granted through 1995, in part, due to the inability to reconstruct dose for neptunium.

Conclusion

DCAS has violated both the Final Rule and the ACA. They failed to identify all processes that occurred at Rocky Flats, locate necessary source documents needed to develop a method to reconstruct dose for each and every cancer. They have ignored evidence submitted to them or provided an explanation as to why they rejected evidence in a way that ***"...is so implausible that it could not be ascribed to a difference in view or the product of agency expertise."***

The petitioners respectfully request that the denial to expand the SEC class beyond December 31, 1983 be voided and that the class be expanded through the date the Rocky Flats Plant closed.

Sincerely,

signature on file

Charles Saunders
Rocky Flats SEC petitioner

signature on file

Terrie Barrie
Rocky Flats SEC co-petitioner