SEC Petition Evaluation Report
Petition SEC-00252

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Petition Administrative Summary

Petition Under Evaluation

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Petition Class

NIOSH-Proposed Class Definition:	All Atomic Weapons employees who worked at the West Valley Demonstration Project in West Valley, New York, from January 1, 1969 through December 31, 1973, for a number of work days aggregating at least 250 work days, occurring either solely under this employment or in combination with work days within the parameters established for one or more other classes of employees in the Special Exposure Cohort.

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Evaluation Report Summary: SEC-00252, West Valley Demonstration Project

The National Institute for Occupational Safety and Health (NIOSH) prepared this evaluation report in response to a petition to add a class of workers at West Valley Demonstration Project (WVDP) to the Special Exposure Cohort (SEC). The *Energy Employees Occupational Illness Compensation Program Act of 2000*, as amended, (EEOICPA) and 42 C.F.R. pt. 83, *Procedures for Designating Classes of Employees as Members of the Special Exposure Cohort under the Energy Employees Occupational Illness Compensation Program Act of 2000,* describe the process for adding new classes to the SEC.

NIOSH-Proposed Class Definition

All Atomic Weapons employees who worked at the West Valley Demonstration Project in West Valley, New York, from January 1, 1969 through December 31, 1973, for a number of work days aggregating at least 250 work days, occurring either solely under this employment, or in combination with work days within the parameters established for one or more other classes of employees included in the Special Exposure Cohort.

Feasibility of Dose Reconstruction Findings

NIOSH lacks sufficient information, which includes biological monitoring, air monitoring information, or process monitoring information, to allow it to estimate with sufficient accuracy the potential internal exposures to uranium and mixed fission products to which the proposed class may have been subjected. NIOSH finds that it is not applicable to reconstruct occupational medical dose for West Valley Demonstration Project employees because medical X-ray procedures were performed at an offsite, non-EEOICPA-covered facility.

This evaluation responds to a petition based on NIOSH determining that internal radiation exposures could not be reconstructed for a dose reconstruction referred to NIOSH by the Department of Labor (DOL). The feasibility of external dose reconstruction is not addressed in this evaluation.

The NIOSH dose reconstruction feasibility findings are based on the following:

- Principal sources of internal radiation for members of the proposed class included exposures to thorium-232 (Th-232), uranium-233 (U-233), uranium-235 (U-235), neptunium-237 (Np-237), uranium-238 (U-238), plutonium-238 (Pu-238), plutonium-239 (Pu-239), plutonium-240 (Pu-240), plutonium-241 (Pu-241), americium-241 (Am-241), curium-244 (Cm-244), and mixed fission and activation products. The modes of exposure were inhalation and ingestion during fuel reprocessing activities.

- NIOSH has determined that the sparse uranium bioassay data available for 1969 through 1973 are inadequate for WVDP claimants. Mixed fission product bioassay data are likewise inadequate for 1972 and 1973. Therefore, NIOSH cannot estimate internal doses from uranium and mixed fission products with sufficient accuracy for these radionuclides for this period.

- Pursuant to 42 C.F.R. § 83.13(c)(1), NIOSH determined that there is insufficient information to either: (1) estimate 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) estimate the radiation doses of members of the class more precisely than a maximum dose estimate.

Although NIOSH found that it is not possible to completely reconstruct radiation doses for the proposed class, NIOSH intends to use any internal and external monitoring data that may become available for an individual claim (and that can be interpreted using existing NIOSH dose reconstruction processes or procedures). Therefore, dose reconstructions for individuals employed at WVDP during the period from January 1, 1969 through December 31, 1973, but who do not qualify for inclusion in the SEC, may be performed using these data as appropriate.

The operational period from January 1, 1966 through December 31, 1968, was not included in this SEC recommendation because NIOSH has significantly more internal dosimetry data available to assess intakes for this period than for the January 1, 1969 through December 31, 1973 period. NIOSH is continuing to evaluate the quality and sufficiency of the 1966 through 1968 data.

Health Endangerment Determination

The NIOSH evaluation did not identify any evidence that would establish that the class was exposed to radiation during a discrete incident likely to have involved exceptionally high-level exposures, such as nuclear criticality incidents or other events involving similarly high levels of exposures. However, the evidence reviewed in this evaluation indicates that some employees in the class may have accumulated chronic radiation exposures through intakes of radioactive materials and from direct exposure to radioactive materials. Therefore, 42 C.F.R. § 83.13(c)(3)(ii) requires NIOSH to specify that health may have been endangered for those employees covered by this evaluation who were employed for a number of work days aggregating at least 250 work days within the parameters established for this class or in combination with work days within the parameters established for one or more other classes of employees in the SEC.

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SEC Petition Evaluation Report for SEC-00252

ATTRIBUTION AND ANNOTATION: This is a single-author document. All conclusions drawn from the data presented in this evaluation were made by the ORAU Team Lead Technical Evaluator: Timothy Kirkham; Oak Ridge Associated Universities. The rationales for all conclusions in this document are explained in the associated text.

1.0 Purpose and Scope

This report evaluates the feasibility of reconstructing doses for employees who worked at the WVDP facility during a specified time. It provides information and analysis germane to considering a petition for adding a class of employees to the Congressionally-created SEC.

This report does not make any determinations concerning the feasibility of dose reconstruction that necessarily apply to any individual energy employee who might require a dose reconstruction from NIOSH, with the exception of the employee whose dose reconstruction could not be completed, and whose claim consequently led to this petition evaluation. The finding in this report is not the final determination as to whether or not the proposed class will be added to the SEC. This report will be considered by the Advisory Board on Radiation and Worker Health (the Board) and by the Secretary of Health and Human Services (HHS). The Secretary of HHS will make final decisions concerning whether or not to add one or more classes to the SEC in response to the petition addressed by this report.

This evaluation, in which NIOSH provides its findings both on the feasibility of estimating radiation doses of members of this class with sufficient accuracy and on health endangerment, was conducted in accordance with the requirements of EEOICPA and 42 C.F.R. § 83.14.

2.0 Introduction

Both EEOICPA and 42 C.F.R. pt. 83 require NIOSH to evaluate qualified petitions requesting that the Department of Health and Human Services add a class of employees to the SEC. The evaluation is intended to provide a fair, science-based determination of whether it is feasible to estimate, with sufficient accuracy, the radiation doses of the proposed class of employees through NIOSH dose reconstructions.[1]

[1] NIOSH dose reconstructions under EEOICPA are performed using the methods promulgated under 42 C.F.R. pt. 82 and the detailed implementation guidelines available on the NIOSH Radiation Dose Reconstruction Program page.

NIOSH is required to document its evaluation in a report, and to do so, relies upon both its own dose reconstruction expertise as well as technical support from its contractor, Oak Ridge Associated Universities (ORAU). Once completed, NIOSH provides the report to both the petitioners and the Advisory Board on Radiation and Worker Health. The Board will consider the NIOSH evaluation report, together with the petition, comments of the petitioner(s) and such other information as the Board considers appropriate, to make recommendations to the Secretary of HHS on whether or not to add one or more classes of employees to the SEC. Once NIOSH has received and considered the advice of the Board, the Director of NIOSH will propose a decision on behalf of HHS. The Secretary of HHS will make the final decision, taking into account the NIOSH evaluation, the advice of the Board, and the proposed decision issued by NIOSH. As part of this final decision process, the petitioner(s) may seek a review of certain types of final decisions issued by the Secretary of HHS.[2]

3.0 NIOSH-Proposed Class Definition and Petition Basis

The NIOSH-proposed class includes all Atomic Weapons employees who worked at the West Valley Demonstration Project in West Valley, New York, from January 1, 1969 through December 31, 1973, for a number of work days aggregating at least 250 work days, occurring either solely under this employment, or in combination with work days within the parameters established for one or more other classes of employees included in the Special Exposure Cohort. During this period, employees at this facility were involved in fuel reprocessing.

The evaluation responds to Petition SEC-00252 which was submitted by an EEOICPA claimant whose dose reconstruction could not be completed by NIOSH due to a lack of sufficient dosimetry-related information. NIOSH's determination that it is unable to complete a dose reconstruction for an EEOICPA claimant is a qualified basis for submitting an SEC petition pursuant to 42 C.F.R. § 83.9(b).

4.0 Radiological Operations Relevant to the Proposed Class

The following subsections summarize the radiological operations at WVDP and the information available to NIOSH to characterize particular processes and radioactive source materials. Using available sources, NIOSH has attempted to gather process and source descriptions, information regarding the identity and quantities of radionuclides of concern, and information describing processes through which the radiation exposures of concern may have occurred and the physical environment in which they may have occurred. The information included within this evaluation report is meant only to be a summary of the available information.

[2] See 42 C.F.R. pt. 83 for a full description of the procedures summarized here. Additional internal procedures are available on the NIOSH Radiation Dose Reconstruction Program page.

4.1 Operations Description

WVDP was located in Ashford, New York, in Cattaraugus County, approximately 35 miles south of Buffalo, New York, on a 3,345-acre site. The site was originally purchased by the state of New York in 1959 and was leased from New York State in 1962 by Nuclear Fuel Services, Inc. (NFS) (Michalczak, 2004).

On May 27, 1965, WVDP (formerly referred to as the NFS West Valley facility) was granted a license to receive and store spent nuclear fuel (AEC, 1966, PDF p. 99), and on April 19, 1966, was granted a license to reprocess spent fuel. The site operated as a private, spent nuclear-fuel reprocessing center from 1966 through 1972 using the Plutonium Uranium Extraction (PUREX) process. In addition, a single Thorium Extraction (THOREX) campaign took place between November 15, 1968, and January 20, 1969, for the Indian Point Plant (Birchler, 1970). On November 15, 1967, NFS and the New York State Atomic and Space Development Authority (NYSASDA) applied for a construction permit for neptunium extraction for startup in 1970 (AEC, 1968). Fuel assemblies continued to be shipped to WVDP through 1972. In 1972, fuel reprocessing was halted to increase reprocessing capacity and upgrade the facility to meet new regulatory requirements.

Throughout its operational history, WVDP received both commercial and government spent fuels, with roughly 60 percent of the fuel and 33 percent of the plutonium coming from Department of Energy (DOE) reactors. The facility had remote-handling capabilities with a design capacity of 300 tons of fuel per year. As a spent-fuel processing facility, WVDP did not receive recycled uranium. It did, however, reprocess and recover approximately 620 metric tons of recycled uranium. The recovered uranium was shipped to the Feed Materials Production Center in Fernald, Ohio, for conversion into metal and intermediate uranium compounds (DOE, 2000b, PDF p. 5).

For the period of this evaluation, January 1, 1969 through December 31, 1973, the WVDP workforce consisted of approximately 200-300 employees. By July 1973, NFS was down from 187 to about 65 permanent employees (Inspection, 1973a, PDF p. 411; Inspection, 1973b, PDF p. 453).

Fuel Reprocessing Activities

Fuel reprocessing operations using the PUREX process took place from 1966 through 1972. The PUREX process was utilized for recovering uranium and plutonium. This process included storing spent fuel assemblies; chopping the assembly rods; dissolving the uranium, plutonium, and radioactive products in acid; separating and storing the radioactive wastes; and separating uranium nitrate from plutonium nitrate. The plant was designed to facilitate the remote handling of spent reactor fuel and to separate and recover the uranium and plutonium. Fission products were separated from the product material and processed as liquid-waste materials.

The PUREX process utilized pulsed solvent-extraction columns with a counter-current flow of tributyl phosphate and kerosene. This organic solvent would pick up the plutonium and uranium nitrates, while the fission products would remain and were removed in the aqueous phase. The recovered materials were extracted and concentrated together in the organic solvent and then purified by chemical scrubbing with dilute, nitric acid. Two further cycles of solvent extraction and scrubbing each resulted in separate, concentrated, and purified aqueous solutions of plutonium nitrate and uranium nitrate (DOE, 2000a, PDF p. 53).

From 1966 to 1972, WVDP handled and reprocessed a total of 630 tons of spent fuel from nine different reactors during 28 campaigns. Fuels processed included light-water reactor fuels (from both boiling- and pressurized-water reactors), fuels from Atomic Energy Commission (AEC)-owned reactors (such as the Hanford N Reactor), and a uranium-thorium fuel cycle core from the Indian Point 1 Reactor. Plutonium and uranium recovered from irradiated fuels were delivered as nitrates. The recovered uranium was sent to the Feed Materials Production Center in Ohio and the plutonium was sent to either the Hanford site in Washington or later to the offsite NYSASDA Plutonium Storage Facility. In general, AEC plutonium was sent to Hanford, and utility-owned plutonium was retained by the utilities, sold to industry, or sold to NFS so that it could be resold later for plutonium-recycle processes. NFS and NYSASDA entered into a plutonium storage agreement on May 3, 1971, in which NYSASDA would store plutonium at its Plutonium Storage Facility, located approximately 2,200 meters south-southeast of the NFS site (NYSASDA and NFS, 1971).

Following a THOREX processing campaign for the Indian Point Plant, which took place from November 15, 1968 through January 20, 1969, the processing system was thoroughly flushed in order to reduce the amount of highly-enriched uranium in its systems. Thorium-fuel processing required significant changes to the recovery process in order to account for the high levels of thorium, U-235, and U-233 present. The fuel also contained Pu-239. The high concentrations of fissile species required the use of boron in the dissolving process. A number of systems normally used in processing (e.g., wash systems, silica beds) were not used due to criticality concerns. High Pu-238 activity required resin beds to be regenerated more frequently than usual. By 1970, the plant had processed spent fuel with burnups as high as 30,000 MWd/MTU (Runion, 1970).

The last fuel reprocessing campaign at WVDP was completed in November 1971 (Nelson, 1973a). The last plutonium scrap-recovery operation took place in March 1972 (Inspection, 1973b, PDF p. 453). Afterward, WVDP was in a shutdown condition, with operations limited to fuel receipt and storage and decontamination activities. Per the AEC, decontamination activities were significantly reduced after May 1973 (Nelson, 1973b).

4.2 Radiation Exposure Potential from Operations

The following subsections provide an overview of the internal and external exposure potential for the WVDP class under evaluation. Descriptions of facility-specific radiological operations are presented in more detail in Section 4.4.

Fuel segmentation operations at WVDP resulted in substantial quantities of high-specific-activity airborne particulate matter, resulting in significant operational difficulties associated with the plant ventilation systems and airflow issues. This, coupled with other unforeseen circumstances involving radioactivity in systems where it was not anticipated, or at unanticipated levels, meant radiological conditions encumbered operations at WVDP from the outset. Routine maintenance activities had to be performed in high-dose-rate environments. Dose rates in normally-occupied areas were high, and radiological contamination from maintenance activities and spills was also substantial plant-wide. High background levels compromised the effectiveness of contamination control measurements (ORAUT-TKBS-0057).

4.2.1 Internal Exposure Potential

The potential for intakes of radioactive materials resulting from fuel reprocessing activities existed at the WVDP throughout the AWE time period. An AEC letter dated March 16, 1972, states:

> "…criteria and objectives for the protection of plant personnel have not been fully realized. You have failed to maintain effective containment of radioactive material to areas within the process equipment, cells and plant systems and your program for protecting your workers through the use of masks and other protective equipment has not been completely adequate in that NFS records and reports show that during the years 1966 through 1971, 36 individuals (in 13 separate incidents) have been exposed during their work, to excessive concentrations of radioactive materials which resulted in the uptake of such materials in the body through inhalation or ingestion. In addition, our inspectors have observed, and plant records show, that radioactive contamination also exists outside plant buildings in areas of the plant environs. Furthermore, from inspection of these data and from the observations by our inspectors, it appears that there has been no significant improvement in exposure controls or radiological safety conditions during the operating history of your plant" (Low, 1972, PDF p. 185).

Sources of internal radiation dose for members of the evaluated class included exposures to U-233, Np-237, Pu-238, Pu-239, Pu-240, Pu-241, Am-241, Cm-244, and mixed fission and activation products (WVDP, 2005; Michalczak, 2004).

4.2.2 External Exposure Potential

The potential for external radiation doses from exposure to beta, photon, and neutron radiation from various radioactive materials also existed at the WVDP site. This evaluation, however, responds to a petition based on NIOSH determining that internal radiation exposures could not be reconstructed for a dose reconstruction referred to NIOSH by DOL. HHS considers this determination to be sufficient, without further consideration of external exposure potential, to determine that it is not feasible to estimate the levels of radiation doses of individual members of the class with sufficient accuracy. Consequently, it is not necessary for NIOSH to fully evaluate the feasibility of reconstructing external radiation exposures for the class of employees covered by this report. Therefore, details regarding external dose are not addressed in this document.

4.3 Time Period Associated with Radiological Operations

Although this evaluation is specific to the period from January 1, 1969 through December 31, 1973, per the DOE Office of Health, Safety and Security, the time period associated with AWE operations at WVDP is from January 1, 1966 through December 31, 1973. NIOSH has discovered no additional data to support more specific dates for the start and stop of AWE operations. Therefore, AWE work at WVDP is assumed to have started on January 1, 1966, and to have continued through December 31, 1973, which encompasses NIOSH's proposed class time period. The early operational period from January 1, 1966 through December 31, 1968, was not included in this evaluation because NIOSH believes it may have sufficient internal dosimetry data available for this period to support individual dose reconstructions. NIOSH is continuing to evaluate the period from 1966 through 1968.

4.4 Site Locations Associated with Radiological Operations

WVDP's Reprocessing Plant consisted of a complex of cells with the various supporting and operating areas grouped around them. The plant was arranged in a U-shape, with the Fuel Receiving and Storage (FRS) Facility on one end and the Product Removal Facilities on the other. The mechanical and chemical processing cells were in the middle (Runion, 1970). Most areas of the Reprocessing Plant fell into one of three categories: shielded cells, operating aisles, and unshielded rooms (WVDP, 2005). The cells consisted of reinforced concrete walls several feet thick. The rest of the plant was constructed out of cinderblock. Chemical operations were directed from the Control Room, while mechanical operations were directed from operating aisles adjacent to viewing windows in the hot cells (Runion, 1970).

NIOSH has concluded that the available documentation does not indicate any definite boundaries between radiological and non-radiological areas for the period being evaluated. Furthermore, NIOSH has determined that the site-specific and claimant-specific data available for the time period covered in this evaluation are insufficient to allow NIOSH to characterize employee movements across the WVDP site. NIOSH is therefore unable to define individual employee exposure scenarios based on specific work locations within the WVDP site during the period under evaluation.

4.5 Job Descriptions Affected by Radiological Operations

NIOSH has determined that the site-specific and claimant-specific data available for WVDP for the time period under evaluation are insufficient to allow NIOSH to determine that any specific work group was not potentially exposed to radioactive material releases or possible subsequent contamination. NIOSH has insufficient information associating job titles and/or job assignments with specific radiological operations or conditions. Without such information, NIOSH is unable to define potential radiation exposure conditions based on employee job descriptions.

5.0 Summary of Available Monitoring Data for the Proposed Class

The primary data used for determining internal exposures are derived from personal monitoring data, such as urinalyses, fecal samples, and whole-body counting results. If these are unavailable, the air monitoring data from breathing zone and general area monitoring are used to estimate the potential internal exposure. If personal monitoring and breathing zone area monitoring are unavailable, internal exposures can sometimes be estimated using more general area monitoring, process information, and information characterizing and quantifying the source term.

This same hierarchy is used for determining the external exposures to the cancer site. Personal monitoring data from film badges or thermoluminescent dosimeters (TLDs) are the primary data used to determine such external exposures. If there are no personal monitoring data, exposure rate surveys, process knowledge, and source term modeling can sometimes be used to reconstruct the potential exposure.

A more detailed discussion of the information required for dose reconstruction can be found in OCAS-IG-001, *External Dose Reconstruction Implementation Guideline,* and OCAS-IG-002, *Internal Dose Reconstruction Implementation Guideline*. These documents are available at: http://www.cdc.gov/niosh/ocas/ocasdose.html.

5.1 Data Capture Efforts and Sources Reviewed

As a standard practice, NIOSH completed an extensive database and Internet search for information regarding WVDP. The database search included the DOE Noncompliance Tracking System, the DOE Occurrence Reporting and Processing system, the Defense Technical Information Center, the DOE Legacy Management Considered Sites database, the DOE Office of Scientific and Technical Information (OSTI) SciTech Connect database, and the Hanford Declassified Document Retrieval System. In addition to general Internet searches, the NIOSH Internet search included OSTI OpenNet Advanced searches, Nuclear Regulatory Commission (NRC) Agency-wide Documents Access and Management (ADAMS) web searches, and the DOE-National Nuclear Security Administration-Nevada Site Office-search. Attachment One contains a summary of WVDP documents. The summary specifically identifies data capture details and general descriptions of the documents retrieved.

In addition to the database and Internet searches listed above, NIOSH identified and reviewed numerous data sources to determine information relevant to determining the feasibility of dose reconstruction for the class of employees under evaluation. This included determining the availability of information on personal monitoring, area monitoring, industrial processes, and radiation source materials. NIOSH also conducted major physical data captures at the WVDP site, the Nuclear Regulatory Commission Public Document Room, and the Lee's Summit, Missouri Federal Records Center where 7,781 documents were captured.

5.2 Previous Dose Reconstructions

NIOSH reviewed its NIOSH DCAS Claims Tracking System (referred to as NOCTS) to locate EEOICPA-related dose reconstructions that might provide information relevant to the petition evaluation. Table 5-1 summarizes the results of this review. (NOCTS data available as of July 19, 2019)

Table 5-1: No. of WVDP Claims Submitted Under the Dose Reconstruction Rule

Description	Totals
Total number of claims submitted for dose reconstruction	150
Total number of claims submitted for energy employees who worked during the period under evaluation (January 1, 1969 through December 31, 1973)	35
Total number of claims submitted for energy employees who started their employment during the period under evaluation (January 1, 1969 through December 31, 1973)	12
Number of dose reconstructions completed for energy employees who worked during the period under evaluation (i.e., the number of such claims completed by NIOSH and submitted to the Department of Labor for final approval).	33
Number of claims for which internal dosimetry records were obtained for the identified years in the evaluated class definition	24
Number of claims for which external dosimetry records were obtained for the identified years in the evaluated class definition	33

NIOSH reviewed each claim to determine whether internal and/or external personal monitoring records could be obtained for the employee. As indicated in Table 5-1, of the total number of claims

submitted for energy employees who worked within the time period under this evaluation, 24 (69%) contain internal monitoring data and 33 (94%) contain external monitoring data.

5.3 Employee Interviews

This evaluation was initiated because the internal dosimetry data provided by DOE was found to be incomplete. Employee interviews for the specific purpose of supporting this evaluation were not considered likely to produce new information that would change the feasibility findings for the period under evaluation. Therefore, NIOSH did not conduct interviews for this SEC-00252 evaluation.

5.4 Internal Monitoring Data

In vivo and *in vitro* bioassay data were utilized to varying degrees at WVDP during the operational period. Assays utilized have included chest counts, whole-body counts, urine, and fecal analysis. Targeted radionuclides have included Am-241, Pu-239/240, mixed fission products (MFP), activation and corrosion products (Monitoring, 1967–1975, PDF p. 2104), and uranium. From 1966 to September 1972, a chest counter was used for ad hoc onsite screening and a phoswich counter at NYU-Rochester was used for post-incident follow-up counts for transuranic radionuclides.

In 1967, NFS appears to have used a bioassay program focused on estimating intakes of plutonium. If potential intakes occurred at a Mechanical Processing Area, the plutonium was assumed to be in an insoluble metal or oxide form. This plutonium, which would most likely appear in fecal samples, was assumed to have been accompanied by fission products. Nasal smears analyzed for fission products were believed to be more sensitive indicators of plutonium intakes than fecal samples. The bioassay program in these areas included nasal smears for fission products and chest counting using a 3-inch by 3-inch Na I detector. Depending on the nasal smear and chest count results, fecal samples would also be obtained and/or whole-body counting would be used to estimate intakes. If plutonium intakes were suspected in a Chemical Processing Area, the plutonium was assumed to be in a soluble nitrate form and urinalyses were used to assess intakes (Runion, 1967, PDF p. 29).

Table 5-2 shows the levels (in disintegrations per minute [DPM]) at which special bioassay samples were required circa early 1968 for plutonium, uranium, and MFP (WVDP, 1968, PDF pp. 34-36).

Table 5-2: Special Bioassay Sample Requirements Following Possible Uptake of Pu, U, or MFP

Evidence of Exposure	Action Point for Plutonium	Action Point for Uranium	Action Point for MFP	Action Taken
Activity in nasal passages	50 dpm alpha	500 dpm alpha	500 dpm beta	Collect 2 consecutive urine samples
Activity in nasal passages	500 dpm alpha	5,000 dpm alpha	5,000 dpm beta	Collect 5 consecutive urine samples
Skin contamination	50,000 dpm alpha	100,000 dpm alpha	500,000 dpm beta	Collect 2 consecutive urine samples

An inspection conducted by the AEC in 1974 found that the WVDP nasal smear action limits of 50 dpm alpha and 5,000 dpm beta were not technically justified and were inappropriate. The report indicated that the derivation of the site's nasal action limits were not based upon the limits prescribed by 10 C.F.R. § 20.103, but were set to equal an inhaled activity which would give a 1% body burden of Pu-239 and Sr/Y-90. The inspection report states that if the same calculation had been appropriately based upon exposures equivalent to 40 MPC hours of Pu-239 and Sr-Y-90, the nasal action levels would be significantly less (i.e., 5.6 dpm alpha and 2,800 dpm beta, respectively) (O'Reilly, 1975).

The inspection report cited an example of an employee with a nasal smear showing 16 dpm alpha and 9,000 dpm beta. The employee was required to submit a urine sample and was whole-body counted. The raw data for the whole-body count was located but the evaluation interpreting the data wasn't documented, although the site maintained at the time that the count did not indicate significant exposure to airborne MFP. The urine sample was not sent to the vendor for analysis until nearly three

months after it was submitted. In the meantime, the employee continued to perform radiological work. The inspector not only found the nasal smear action level to be inappropriate, but also found no basis for using the nasal smear results for purposes of evaluating the extent of an exposure as opposed to using it only as an indicator of potential exposure (O'Reilly, 1975).

NIOSH has access to some bioassay results beginning in January 1967 and going past December 1973 (Monitoring, 1967–1973). Results show urine data analyzed for total plutonium (Total Pu) and MFP for 1967, and beginning in October 1967, the results show Total Pu and MFP in fecal results (continuing until 1970). Then in January 1970, fecal results for Pu-239 and Total Pu are presented, as well as MFP in urine. These data continue into August 1972 when Pu-239 and Pu-240 results are found for urine samples. The urine samples for Pu-239, Pu-240, and Total Pu continue into 1973, along with some fecal sample results with the same analyses. In March 1973, there are results for Am-241 in urine. NIOSH found evidence of the ability to perform thorium bioassay, but no results for thorium were located.

Event-driven conditions requiring a bioassay sample were listed as (Clark, 1968, PDF p. 95):

- a positive nose blow is detected,
- work is completed in areas with alpha contamination above 500,000 dpm/100 cm^2,
- loss of air supply in areas with smearable contamination above 500 dpm alpha/100 cm^2 or 50,000 dpm beta/100 cm^2 , and/or
- facial contamination above 50 cpm alpha or 100 cpm beta/probe area is detected.

A Safety and Industrial Relations monthly report from [Month redacted] 1969 includes an example of a lack of control of airborne activity. The report indicates that on [Month/day redacted], ten employees and three visitors were exposed to airborne activity in the [Location redacted]. Initial chest counts on these individuals showed lung burdens to 50%. However, a recount 12 days later showed that the lungs had cleared the radioactivity (Keely, 1969, PDF p. 499).

NIOSH located many delinquent notices that placed workers on work restriction due to the workers not submitting a required bioassay; some workers were restricted over several weeks due to continued violations. One notice dated [Month/day redacted], 1971, contained sixteen worker names, [Number redacted] of whom had been delinquent more than once, and [Number redacted] of those were delinquent by eight months (Wilcox, 1971); thus, indicating an inadequate bioassay program. There is some indication that notices were issued lifting work restrictions, but NIOSH has not located a comprehensive list tracking work restrictions or the release from work restrictions.

Correspondence regarding a yearly report for 1970 implies that urinalyses for radionuclides other than mixed fission and activation products were performed onsite, and that counts were often lost "due to electrical storms." Sample counting began in April 1970. The reported results show that approximately 10% of the counts were lost. The 1970 onsite counting included samples collected in 1969 since they lost three months of counting due to a labor strike. WVDP personnel counted 393 urine samples in house, shipped out approximately 150 samples for urinalysis for MFP, and shipped out approximately 200 fecal samples (Kester, 1971, PDF p. 1378).

Table 5-3 shows the number of various bioassay data results that NIOSH obtained through its data capture efforts for the period from January 1, 1966 through December 31, 1973.

Table 5-3: No. of Available Bioassay Results for January 1, 1966 through December 31, 1973

Year	Urine Plutonium	Fecal Plutonium	Urine Uranium	Urine MFP	Fecal MFP	Total In Vitro	Whole Body Count	Chest Count
1966	2	0	0	2	0	4	2	0
1967	782	106	46	225	1	1160	160	0
1968	527	68	89	221	1	906	128	2
1969	1	21	5	56	10	93	120	8
1970	1	178	1	75	2	257	165	0
1971	2	193	1	104	28	328	11	11
1972	116	61	1	45	1	224	4	11
1973	249	11	1	1	1	263	0	0

Sources: Monitoring, 1965-1967, PDF p. 163; Monitoring, 1966–1973, PDF pp. 26, 89; Monitoring, 1967–1975, PDF pp. 1798–2041 and 2065–2177

As noted in Table 5-3, NIOSH's evaluation of the available bioassay data indicated a marked decrease in the number of plutonium and uranium bioassay samples starting in 1969 with a significant, sustained decrease in the uranium urine bioassays (Monitoring, 1966-1973). A discussion of the bioassay program in a WVDP letter dated June 28, 1968, indicates that the supplier of bioassay services, Isotopes, Inc., was providing poor quality work in identifying positive routine samples. WVDP chose to change suppliers to Eberline Instrument Corporation at that time. The letter also denotes cost cutting efforts including discontinuing annual MFP analysis, decreasing plutonium routine analyses from quarterly to annually (because of the increased sensitivity of the Eberline analyses), and a possible increase in special sampling (Keely, 1968). The decrease in routine sampling as discussed in this letter is corroborated in the NIOSH data analysis presented in Table 5-3.

5.5 External Monitoring Data

As stated in Section 4.2.2, this evaluation responds to a petition based on NIOSH determining that internal radiation exposures could not be reconstructed for a dose reconstruction referred to NIOSH by the DOL. External dose reconstruction is not addressed in this evaluation.

5.6 Workplace Monitoring Data

NIOSH could not locate breathing zone air sample data. NIOSH has access to air sample data sheets indicating results from March 1970 in the General Purpose Cell Room and from 1973 in the Analytical Aisle (via Continuous Air Monitor). This same dataset also includes copies of logbook pages with gross alpha and gross beta results from routine (daily and weekly) air monitoring from 1966 through 1974 (Monitoring, 1966–1974).

NIOSH has access to Radiation Contamination status reports for August 1965 through December 1967 (Monitoring, 1965–1967). These reports indicate that relatively high contamination levels were common in many areas, with both alpha- and beta-smearable levels often exceeding several hundred thousand dpm/100 cm^2, and even exceeding several million dpm/100 cm^2 in some areas. The reports appear to highlight the most heavily contaminated areas. Detailed air concentration levels are not provided, although in some instances particularly high levels are described in terms of mrads/hr by direct sample measurement with a survey meter. These reports group areas and rooms into specified zones, depending on their contamination status. For example, "Zone III" areas are defined as having contamination levels ranging from 50 to 500 dpm/100 cm^2 alpha or 500 to 5000 dpm/100cm^2 beta. Rooms and areas designated as airborne contamination areas are also listed on these reports. Entry into airborne contamination areas required supplied respiratory protection. Airborne contamination areas are defined as areas where airborne contamination levels exceed the MPC (maximum permissible concentration), 2 x 10^{-12} µCi/cc for long-lived alpha, based on Pu-239, and 1 x 10^{-9} µCi/cc for long-lived beta, based on mixed fission products.

NIOSH has access to logbook pages that list alpha- and beta-contamination smear and dose-rate results from 1972 through 1974 by room location (Monitoring, 1972–1974, PDF pp. 26–119). These logbook pages document routine contamination and dose rate surveys from July 1973 through October 1974 in various areas. Some areas were surveyed weekly, some monthly, and others quarterly. The units associated with these smear results are unspecified, but are likely dpm/100 cm^2. The radiation level results are in units of mR/hr.

5.7 Radiological Source Term Data

The WVDP facility, with a design capacity to process 300 tons of spent fuel per year, reprocessed and recovered approximately 620 metric tons of recycled uranium. While NIOSH has access to the primary radionuclides that were present and workers worked with at WVDP, specific information that would support a source term exposure evaluation for the WVDP workers is limited.

Available nuclide mix information for product streams show that the plutonium produced at WVDP was, in general, approximately 75% Pu-239 by weight. In terms of alpha activity, the data show that, in general, the dominant nuclide was Pu-238 (Shipping, 1969–1970; Monitoring, 1967–1975, PDF pp. 2020–2037). This is consistent with the reactor-grade plutonium that was being separated.

From November 15, 1968, through January 20, 1969, the Reprocessing Plant ran a THOREX fuel cycle to reprocess thorium-uranium fuel from Indian Point Unit 1 (an offsite nuclear plant). Thus during this time period, in addition to the other nuclides normally encountered, workers would have encountered thorium, thorium decay products, and U-233 during work activities in the Reprocessing Plant. There was also higher-than-usual amounts of U-235 and Pu-238 present during this campaign (Birchler, 1970).

Beta contamination at WVDP would have included a mixture of fission and activation products representative of irradiated nuclear fuel. The nuclides present would have included H-3, Co-58, Co-60, Sr/Y-90, Zr/Nb-95, Tc-99, Ru/Rh-106, Sb-125, Cs-134, Cs-137, Ce-141, and Ce-144. In 1966, the principal gamma emitters in the FRS pool water were found to be Co-58, Co-60, and Cs-137 (Loud, 1966). In May 1972, isotopic measurements of FRS pool water included concentration data for Cs-134, Cs-137, Ru/Rh-106, Ce/Pr-144, and Sb-125 (Jaroszeski, 1972). Ruthenium was a large

contributor to the radioactivity in the acid recovery system (NFS, 1973–1976, PDF p. 98). Technetium-99 was prominent in the Uranium Product Cell (WVDP, 2005).

6.0 Feasibility of Dose Reconstruction for the Proposed Class

42 C.F.R. § 83.14(b) states that HHS will consider a NIOSH determination that there was insufficient information to complete a dose reconstruction, as indicated in this present case, to be sufficient, without further consideration, to conclude that it is not feasible to estimate the levels of radiation doses of individual members of the class with sufficient accuracy.

In the case of a petition submitted to NIOSH under 42 C.F.R. § 83.9(b), NIOSH has already determined that a dose reconstruction cannot be completed for an employee at the DOE or AWE facility. This determination by NIOSH provides the basis for the petition by the affected claimant. Per § 83.14(a), the NIOSH-proposed class defines those employees who, based on completed research, are similarly affected and for whom, as a class, dose reconstruction is similarly not feasible.

In accordance with § 83.14(a), NIOSH may establish a second class of co-workers at the facility for whom NIOSH believes that dose reconstruction is similarly infeasible, but for whom additional research and analysis is required. If so identified, NIOSH would address this second class in a separate SEC evaluation rather than delay consideration of the claim currently under evaluation (see Section 10). This would allow NIOSH, the Board, and HHS to complete, without delay, their consideration of the class that includes a claimant for whom NIOSH has already determined a dose reconstruction cannot be completed, and whose only possible remedy under EEOICPA is the addition of a class of employees to the SEC.

This section of the report summarizes research findings by which NIOSH determined that it lacked sufficient information to complete the relevant dose reconstruction and on which basis it has defined the class of employees for which dose reconstruction is not feasible. NIOSH's determination relies on the same statutory and regulatory criteria that govern consideration of all SEC petitions.

6.1 Feasibility of Estimating Internal Exposures

NIOSH has evaluated the available employee and workplace monitoring data and source-term information and has determined that there are insufficient data for estimating internal exposures, as described below.

Some *in vitro* and *in vivo* bioassay data are available for workers at WVDP during the evaluated AWE period, as presented in Section 5.4. These data, from chest counts, whole-body counts, and urine and fecal analyses, included results for intakes of Pu-239, Pu-240, total Pu, Am-241, total U, and MFP, including Cs-137, Ru-103/106, Zr/Nb-95, Zn-65, Co-60, and Co-58. The available data, however, are likely to be incomplete. Table 5-1 indicates that there were 24 claims for which internal dosimetry records were obtained for the identified years in the evaluated class definition. DOE provided internal dosimetry data for only 12 of those 24 claims and NIOSH found additional internal dosimetry data, both *in vivo* and *in vitro,* for 10 of those 12. For the remaining 12 claims, claims for which DOE was unable to provide any internal dosimetry data, all of the *in vivo* and *in vitro* bioassay data were obtained via NIOSH data capture efforts.

It is evident that DOE has not provided all internal dosimetry data for all claimants, given the fact that NIOSH has found additional data, beyond that provided by DOE, for most of the claimants to date. For other claims, DOE has provided data that NIOSH did not find in its data capture efforts. This leads NIOSH to conclude that neither set of data, DOE provided or NIOSH data capture, includes all bioassay data. Furthermore, NIOSH has no basis to conclude that the combination of both sets of data include all bioassay data. Given this potential for missing bioassay data, NIOSH has concluded that the data are insufficient for estimating all internal exposures.

Table 6-1 provides a summary of the plutonium, uranium, and mixed fission product bioassay analyses available from the combined urine, fecal, and whole-body count data.

Table 6-1: Summary of Bioassay Analyses by Major Radionuclide and Year

Year	Total Pu[a] Analyses	Total U[b] Analyses	Total MFP[c] Analyses
1966	2	0	4
1967	888	46	386
1968	595	89	250
1969	22	5	186
1970	179	1	242
1971	195	1	143
1972	177	1	50
1973	260	1	2

a) Urine and fecal combined
b) Only urinalysis is available
c) Urine, fecal, and whole-body count total

Considering the small workforce of approximately 200-300 workers, the development of a co-worker model for some radionuclides for some years may be feasible. In particular, the large quantity of data in 1967 and 1968 suggests that a co-worker model may be feasible for those years. NIOSH is evaluating this possibility. A co-worker model for plutonium in 1969 might be feasible. It would depend on whether the stability of the workforce would enable interpolation from the co-worker model results for 1968 and 1970. However, as shown in Table 6-1, the inadequate bioassay information for uranium from 1969 through 1973, coupled with the inadequate bioassay information for mixed fission products in 1972 and 1973, would make a co-worker model for all radionuclides across the 1969 to 1973 time period infeasible. As indicated previously, NIOSH is still evaluating the 1966 to 1968 time period. Although data in 1966 are limited, reprocessing operations do not appear to have started until the latter portion of the year; therefore, the absence of bioassay may or may not be an issue for co-worker model development.

The radiological source term included relatively large quantities of various radioactive materials that posed significant risk for intakes. It is evident from logbook entries and associated data that air monitoring was used to identify airborne contamination areas. There are also some air sample results from the General Purpose Cell Room in March 1970, and there are some Continuous Air Monitor (CAM) results from the Analytical Aisle in 1973. Air concentration data can be used to bound internal exposures when there are low-to-moderate concentrations. In order to perform maintenance, entry into high-airborne radioactive areas requiring respiratory protection was not uncommon at the West Valley Demonstration Project. The use of respiratory protection in high-airborne concentration areas greatly complicates dose reconstruction, and nasal smears and/or bioassay is relied upon to assess potential intakes. Previous discussions concerning nasal-smear action levels indicate that the site used much higher action levels than would currently be required. As a result, there could have

been unmonitored intakes for which the site did not take any follow-up action to assess potential internal exposures. As a result of this practice, personal bioassay or use of bioassay co-worker models would be the only sufficient methods for accurately assessing internal exposures. The use of air concentration data to bound intakes for all workers for all radionuclides in all areas for the period from January 1, 1969 through December 31, 1973 is not considered sufficiently accurate when considering high-airborne concentration levels while respiratory protection may or may not have been used.

Surface contamination results, as presented in Section 5.6 of this report, indicate that relatively high contamination levels were common in many areas throughout the operational period. The contamination levels, both alpha and beta, were quite variable depending upon location, with smearable contamination ranging from virtually non-contaminated to several million dpm/100 cm^2. NIOSH finds it infeasible to determine the times that workers may have spent in the various different areas and also finds it unreasonable to assume that workers spent all of their time in the most heavily contaminated areas. Furthermore, since the available data are gross alpha and gross beta, NIOSH would need to make assumptions regarding the isotopic composition of these results in order to reconstruct doses. Due to the large uncertainties regarding isotopic composition of the contamination and worker occupancy in the various areas, NIOSH finds it infeasible to estimate worker intakes with sufficient accuracy using these data. The data that are available do support NIOSH's position that there was significant potential for intakes.

NIOSH does not have access to sufficient employee monitoring, workplace monitoring, or source term data to estimate potential internal exposures to uranium and mixed fission products during the period of AWE operations. Consequently, NIOSH finds that it is not feasible to estimate, with sufficient accuracy, the internal exposures to uranium or mixed fission products and the resulting doses for the class of employees under evaluation.

Although NIOSH found that it is not possible to completely reconstruct internal radiation doses for the period from January 1, 1969 through December 31, 1973, NIOSH intends to use any internal monitoring data that may become available for an individual claim (and that can be interpreted using existing NIOSH dose reconstruction processes or procedures). Dose reconstructions for individuals employed at West Valley Demonstration Project during the period from January 1, 1969 through December 31, 1973, but who do not qualify for inclusion in the SEC, may be performed using these data as appropriate.

6.2 Feasibility of Estimating External Exposures

This evaluation responds to a petition based on NIOSH determining that internal radiation exposures could not be reconstructed for a dose reconstruction referred to NIOSH by DOL. As noted previously, HHS will consider this determination to be sufficient without further consideration to determine that it is not feasible to estimate the levels of radiation doses of individual members of the class with sufficient accuracy. Consequently, it is not necessary for NIOSH to fully evaluate the feasibility of reconstructing external radiation exposures for the class of employees covered by this report.

NIOSH intends to use any available external monitoring data that may become available for an individual claim (that can be interpreted using existing NIOSH dose reconstruction processes or procedures). Dose reconstructions for individuals employed at WVDP during the period from January 1, 1969 through December 31, 1973, but who do not qualify for inclusion in the SEC, may be performed using these data as appropriate.

6.3 Class Parameters Associated with Infeasibility

The time period associated with AWE operations at WVDP is January 1, 1966 through December 31, 1973. Through the course of ongoing dose reconstruction and data capture efforts, NIOSH has determined that it is unable to estimate, with sufficient accuracy, the total internal dose for WVDP employees for the time period from January 1, 1969 through December 1973. Therefore, NIOSH recommends that the NIOSH-proposed class include the period from January 1, 1969 through December 31, 1973.

Based on the information available to NIOSH, it cannot associate WVDP personnel with specific buildings. There were no barriers between the buildings, and certain personnel, such as maintenance personnel, may have worked in more than one building. NIOSH is unable to define individual employee exposure scenarios based on specific work locations within the WVDP. Therefore, NIOSH recommends that the proposed class definition include all areas of WVDP during the specified time-period.

NIOSH has also found insufficient documentation associating job titles and/or job assignments with specific radiological operations or conditions. Without this information, NIOSH is unable to define the proposed SEC class based on job descriptions. NIOSH therefore recommends that the proposed class include personnel having worked in any area of WVDP and include all job descriptions.

7.0 Summary of Feasibility Findings for Petition SEC-00252

This report evaluates the feasibility for completing dose reconstructions for employees at WVDP from January 1, 1969 through December 31, 1973. NIOSH determined that members of this class may have received radiation exposures through intakes of Th-232, U-233, U-235, Np-237, U-238, Pu-238, Pu-239, Pu-240, Pu-241, Am-241, Cm-244, and mixed fission and activation products. NIOSH lacks sufficient information, such as internal dose monitoring, air monitoring, source term, and contamination monitoring data, which would allow it to estimate the potential cumulative internal exposures to which the proposed class may have been exposed.

NIOSH has documented herein that it cannot complete the dose reconstructions related to this petition. The basis of this finding demonstrates that NIOSH does not have access to sufficient information to estimate either the maximum radiation dose incurred by any member of the class or to estimate such radiation doses more precisely than a maximum dose estimate.

NIOSH finds that it is not feasible to estimate, with sufficient accuracy, the internal radiation doses received by members of the proposed class of employees from January 1, 1969 through December 31, 1973. The time period for the recommended class is the latter portion of the AWE period, as defined in the DOE Covered Facility Database. NIOSH will continue to evaluate dose reconstruction feasibilities for the 1966 to 1968 operating period and the post-1973 residual radiation period at WVDP.

Although NIOSH found that it is not possible to completely reconstruct radiation doses for the proposed class, NIOSH intends to use any internal and external monitoring data that may become available for an individual claim (and that can be interpreted using existing NIOSH dose reconstruction processes or procedures). Therefore, dose reconstructions for individuals employed at WVDP during the period from January 1, 1969 through December 31, 1973, but who do not qualify for inclusion in the SEC, may be performed using these data as appropriate.

8.0 Evaluation of Health Endangerment for Petition SEC-00252

The health endangerment determination for the class of employees covered by this evaluation report is governed by EEOICPA and 42 C.F.R. § 83.14(b) and § 83.13(c)(3). Pursuant to these requirements, if it is not feasible to estimate with sufficient accuracy radiation doses for members of the class, NIOSH must determine that there is a reasonable likelihood that such radiation doses may have endangered the health of members of the class. The regulations require NIOSH to assume that any duration of unprotected exposure may have endangered the health of members of a class when it has been established that the class may have been exposed to radiation during a discrete incident likely to have involved levels of exposure similarly high to those occurring during nuclear criticality incidents. If the occurrence of such an exceptionally high-level exposure has not been established, then NIOSH is required to specify that health was endangered for those employees who were employed for a number of work days aggregating at least 250 work days within the parameters established for the class or in combination with work days within the parameters established for one or more other classes of employees in the SEC.

NIOSH has determined that members of the class were not exposed to radiation during a discrete incident likely to have involved levels of exposure similarly high to those occurring during nuclear criticality incidents. However, the evidence reviewed in this evaluation indicates that some employees in the class may have accumulated chronic internal and external radiation exposures from Th-232, U-233, U-235, Np-237, U-238, Pu-238, Pu-239, Pu-240, Pu-241, Am-241, Cm-244, and mixed fission and activation products. Consequently, NIOSH is specifying that health was endangered for those employees covered by this evaluation who were employed for a number of work days aggregating at least 250 work days within the parameters established for this class or in combination with work days within the parameters established for one or more other classes of employees in the SEC.

9.0 NIOSH-Proposed Class for Petition SEC-00252

The evaluation defines a single class of employees for which NIOSH cannot estimate radiation doses with sufficient accuracy. This class includes all Atomic Weapons employees who worked at the West Valley Demonstration Project in West Valley, New York, from January 1, 1969 through December 31, 1973, for a number of work days aggregating at least 250 work days, occurring either solely under this employment, or in combination with work days within the parameters established for one or more other classes of employees included in the Special Exposure Cohort.

10.0 Evaluation of Second Similar Class

In accordance with § 83.14(a), NIOSH may establish a second class of co-workers at the facility, similar to the class defined in Section 9.0, for whom NIOSH believes that dose reconstruction may not be feasible, and for whom additional research and analyses is required. If a second class is identified, it would require additional research and analyses. Such a class would be addressed in a separate SEC evaluation rather than delay consideration of the current claim. At this time, NIOSH has not identified a second similar class of employees at WVDP for whom dose reconstruction may not be feasible.

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Attachment One: Data Capture Synopsis

Table A1-1: Summary of Holdings in the SRDB for West Valley Demonstration Project

Data Capture Information	Data Capture Description	Date Completed	No. Uploaded into SRDB
Primary Site / Company Name: West Valley Demonstration Project Alternate Site Names: Western New York Nuclear Service Center; Western New York Fuels Service Center Physical Size of the Site: The DOE is responsible for 152 acres of the 3,338 acre site. Major structures in the area of DOE responsibility include the Main Plant Process Building, the Vitrification Facility, four underground storage tanks, and four wastewater treatment lagoons. The entire site is owned by the New York State Energy Research and Development Authority. Site Population: In 1967, 209 workers were monitored for radiation exposure. In 1971, 1,153 workers were monitored for radiation exposure. In 1988 660 workers were monitored for radiation exposure.	Environmental reports, NRC license changes, WVDP internal dosimetry programmatic documents and reviews, air sampling results, radiological survey results, dosimetry procedures, occurrence reports, radiation dosimetry reports, log books, bioassay investigations, waste treatment reports, area monitoring results, periodic radiation protection reports, contamination area logs, periodic operational reports, ALARA performance reports, analyses of container contents, RWPs, effluent monitoring, analyses of waste streams, transuranic waste assays, safety analysis reports, hazard classifications of waste containers, radiological dose performance reports, scheduling of whole-body counts, internal dosimetry quality assurance reports, offsite bioassay laboratory contract requirements, spent fuel reprocessing campaign requirements, respirator issuance and control, shipping cask evaluations, nuclear material inventories, a plutonium inhalation incident, production and handling of uranium hexafluoride, removal of transuranic contaminants from recycled uranium hexafluoride, removal of ruthenium from calciner off-gas, fuel rod shipments, neutron-gamma detection, material transfers, periodic status reports, aerial radiological surveys, WVDP radiological manual, WVDP external dosimetry programmatic documents, design and construction of treatment systems, volatile radioiodine effluent controls, dose trending analyses, a radiological compliance review, trip reports, and the 1995 offsite radiation investigation.	03/14/2019	817
State Contacted: New York State Energy Research and Development Authority (NYSERDA)	The ORAU Team selected 267 documents from NYSERDA's response to the ORAU Team's New York Freedom of Information Law request. NYSERDA staff estimate that pulling and reviewing the requested documents may not be complete until August 2019.	OPEN	1
Albany Research Center	Reference to an ALARA report submitted by WVDP in 2002.	03/22/2013	1
Ames Laboratory	An optical special nuclear material assay quarterly report and occupational radiation exposure history records.	01/28/2016	2
Brookhaven National Laboratory	Cesium-137 concentrations in deer meat, Brookhaven annual reports with spent fuel shipments to West Valley, and the shipment of phantoms to West Valley.	02/18/2009	5
Cincinnati Public Library	A 1991 environmental regulatory guide.	04/24/2006	1
Colorado Mesa University	A literature survey on the environmental effects of tritium.	11/18/2010	1
Curtiss-Wright, Cheswick, PA	Shipment records.	05/04/2009	2

Data Capture Information	Data Capture Description	Date Completed	No. Uploaded into SRDB
Department of Labor / Paragon	Environmental impact statements, the status of New York sites, an aerial survey, Public Law 96-368, and information on low-level mixed waste.	01/23/2012	10
DOE Environmental Management Consolidated Business Center (EMCBC) - Cincinnati	Personnel exposure information cards, the 1981 annual report to Congress, notification that the Brookhaven Area Office is responsible for radiological emergency assistance, 1999-2014 dosimetry data, and the 1998 Bioassay Enforcement Moratorium internal assessment.	02/18/2019	11
DOE EMCBC - Cincinnati / Lee's Summit Federal Records Center	The characterization of sealed rooms for RCRA issues.	02/15/2007	1
DOE Germantown	Site summaries and DOE records search procedures.	03/07/2011	4
DOE Legacy Management - Grand Junction Office	An enriched uranium report, a decontamination report, environmental reports, the draft environmental impact statement, hazardous waste rankings, and FUSRAP reports.	03/11/2011	17
DOE Legacy Management - Morgantown Office	Periodic processing reports, recycled uranium reports, environmental reports, urinalysis reports, air sampling reports, and lapel sampling reports.	04/07/2016	74
DOE Legacy Management - MoundView Office (Fernald Holdings, includes Fernald Legal Database)	Analyses of material transfers to Fernald, trip reports, the analysis and impact of plutonium in recycled uranium, and a report on neptunium in recycled uranium.	04/17/2008	91
DOE Oak Ridge Operations Office	An article on radiation conspiracies and a study of uranium-233.	07/09/2012	2
DOE Office of Scientific and Technical Information (OSTI)	Radioactive waste reports, personnel exposure from a hydro fracturing experiment, and a waste treatment study.	07/02/2015	4
Oak Ridge Gaseous Diffusion Plant (K-25)	Baseline monitoring for transferees to ETTP from West Valley.	07/15/2014	6
Federal Records Center (FRC) - Atlanta	An Oak Ridge Operations Office trip report.	03/17/2004	1
Federal Records Center (FRC) - Dayton	Information from a decontamination services vendor.	06/02/2014	1
Federal Records Center (FRC) - Kansas City	Documentation that Argonne National Laboratory-East was commissioned to perform a West Valley waste burial study and some complex-wide observation from the Kansas City Plant Tiger Team findings.	10/07/2013	2

Data Capture Information	Data Capture Description	Date Completed	No. Uploaded into SRDB
Federal Records Center (FRC) - Lee's Summit	Environmental reports, in vitro monitoring results, procedures, and reports, in vivo monitoring results, radiological control procedures, and reports, radiation dose rate maps, periodic operations reports, ALARA performance reports, decontamination reports, container qualification reports, waste form qualification reports, personnel radiation exposure reports, the 1988 assessment of the WVDP radiological records system, external exposure reports, daily badge transmittal reports, badged worker rosters, Bioassay.DAT exposure data, specific job cumulative dose data, weekly direct reading dosimeter records, area monitoring data, in vivo counter maintenance and calibration, radiation work permits, special dose evaluations, extremity exposure reports, ALARA budgets, ALARA review checklists, air sample results, specific job dose estimates, dosimetry logbooks, routine and job-specific radiation and contamination surveys, Radiation Control Program performance indicators, occurrence reports, NRC monitoring, DOELAP results and reports, lagoon contents radiological analyses, effluent discharge information, radiological controls manual, individual radiation exposure histories, safety analyses, safety evaluations, shielding requirements, radiological waste analyses, stabilization of plutonium extraction waste, waste disposition reports, air sampler and CAM logbooks, IRTS logbooks, X-ray survey, criticality safety evaluations, personnel contamination reports, groundwater reports, nuclear material accountability, closure engineering reports, contaminated soil management, EPA studies and evaluations, dosimetry intercomparisons, analytical intercomparisons, assessments and responses, neutron dose rates, lapel sample logbooks, operational safety requirements, WVDP emergency plan, hazard classifications, a photon streaming report, RCRA facility investigations, incident critique minutes, evaluations of sources of radionuclide emissions, ALARA committee minutes, options for handling transuranic materials, training records, line management self-assessments, equipment and tooling for decontamination jobs, and Tiger Team environmental closeout.	06/13/2016	7,781
Hanford	Hanford reports on reprocessing, material transfers to and from West Valley, material balance reports, and a proposal for cesium-137 recovery.	09/23/2014	14
Idaho National Laboratory	Monthly environmental reports, bioassay reports, independent measurements program data summaries, waste management reports, operational reports, individual radiation dose reports, the bioassay records system, and the bioassay data entry guide.	08/27/2018	77
Idaho National Laboratory Electronic Document Management System (EDMS)	An internal dose assessment methodology, key word search results, Human Radiation Experiment records, and mention of West Valley as a waste disposal site.	06/28/2017	5
Interlibrary Loan	Radioactive waste discharges, a site description, and DOE's 1981 request for proposal to operate West Valley.	08/24/2018	3
Internet - Defense Technical Information Center (DTIC)	An occupational dose reduction bibliography, Defense Nuclear Facilities Safety Board annual reports to Congress, radioactive waste classification for disposal, transportation reports, weapons grade plutonium dispositioning, the toxicological profile for plutonium, and Nevada Test Site waste acceptance criteria.	03/22/2019	12
Internet - DOE	The DOE guide for good practices at plutonium facilities and a 2015 aerial radiological survey.	07/17/2018	2
Internet - DOE Hanford Declassified Document Retrieval System (DDRS)	Material transfers (primarily plutonium) between Hanford and West Valley.	10/27/2008	29

Data Capture Information	Data Capture Description	Date Completed	No. Uploaded into SRDB
Internet - DOE Legacy Management Considered Sites	The West Valley record of decision, volume 1 of the final environmental impact statement, a site history, an official visit, cleanup plans, a review of DOE radioactive waste management, occupational radiation exposure annual reports, and a former worker medical screening report.	06/02/2017	19
Internet - DOE National Nuclear Security Administration (NNSA)	The final Nevada Test Site environmental impact statement for shipping radioactive waste to the site.	04/14/2016	1
Internet - DOE Noncompliance Tracking System (NTS)	Personnel contamination, clothing contamination, area contamination, external exposure limit exceedances, unworn dosimetry, and unplanned exposures reports.	03/15/2019	23
Internet - DOE Occurrence Reporting Processing System (ORPS)	Personnel contamination, clothing contamination, area contamination, and contamination discovery reports.	03/18/2019	22
Internet - DOE Office of Scientific and Technical Information (OSTI)	A 1997 radiation safety report, the development of internal dosimetry derived investigation levels, the characterization of the head-end cells, annual occupational exposure reports, environmental aspects of plutonium bibliography, bibliographies of nuclear safety literature, plutonium uptake cases, radioactive waste reports, potential fuel reprocessing safety issues, nuclear facility safety related issues in 1971, and tritium control technology.	04/24/2019	25
Internet - DOE OpenNet	A United States Transuranium Registry report, plutonium recovery at West Valley, transportation of radioactive materials, INL independent measurements at West Valley, a brief discussion of the hydro fracturing experiment, transfers of plutonium between West Valley and Hanford, a symposium on population exposures, and receipt at Hanford of contaminated shipping casks from West Valley.	04/16/2019	47
Internet - DOE OSTI Energy Citations	Transportation reports, nuclear waste generation reports, decommissioning bibliographies, the draft site treatment plan, chemical safety, and a waste treatment review.	05/07/2013	19
Internet - DOE OSTI Information Bridge	A site history, annual spent fuel inventories, waste vitrification reports, waste generation and pollution prevention reports, transportation of radioactive waste, nuclear facility decommissioning bibliographies, transuranic contaminated waste information, spent fuel management issues, plutonium control and disposition alternatives, the disposition of mixed low-level waste, and transuranic and low-level boxed waste assay technology.	07/31/2013	54
Internet - DOE OSTI SciTech Connect	Decontamination and decommissioning reports, high-level waste reports, waste management alternatives, plutonium oxide dissolution issues, spent fuel transportation, aerial radiological survey, environmental reports, seismic analyses, cleanup progress reports, design of high-level waste treatment systems, tests and characteristics of vitrification glass, waste form qualification experience, environmental assessments, waste management meetings, waste form analyses, waste canister design and qualification, melter testing, groundwater flow and transport modeling, the feed preparation code, vitrification facility design, periodic vitrification reports, nuclear waste treatment periodic reports, New York State low-level waste reports, a melter inspection report, tank wall corrosion studies, spent fuel rod consolidation, the phase 1 final status survey plan, evaluations of off-gas system technologies, reactor spent fuel discharges, tank waste remediation system reports, 2012 occupational radiation exposure summary, an airborne radioactive effluent investigation, the correlation of laboratory testing and actual operations, and the removal of high-level waste from storage tanks.	07/19/2018	424

Data Capture Information	Data Capture Description	Date Completed	No. Uploaded into SRDB
Internet - DOE OSTI SciTech Connect / Lee's Summit FRC	The environmental assessment for low-level and mixed waste treatment.	11/20/2014	1
Internet - Energy Employees Claimant Assistance Project (EECAP)	No relevant documents identified.	03/26/2019	0
Internet - Google	Annual occupational radiation exposure reports, environmental reports, status of the decommissioning reports, waste shipments to and from Nevada Test Site, high-level waste management, U.S. spent fuel inventories, annual reports to Congress, waste generation and pollution prevention reports, measuring and reporting effluents, annual transuranic waste inventories, guidance for low-level and mixed waste handling, annual Defense Nuclear Facility Safety Board reports, general employee training, decontamination reports, individual project environmental checklists, vitrification lessons learned, public meetings, spent nuclear fuel shipments, tank corrosion mitigation, vitrification progress and completion, independent reviews of environmental impact statements, groundwater treatment, site treatment plans, tank waste removal, characteristics of potential repository wastes, environmental sampling plans, radioactive waste classification, and minutes of an Advisory Board on Radiation and Worker Health meeting.	04/09/2019	288
Internet - Health Physics Journal	The Health Physics challenges of fuel reprocessing.	02/15/2007	1
Internet - Idaho National Laboratory	A brief statement on the progress of a TLD test.	08/01/2016	1
Internet - International Journal of Occupational and Environmental Hygiene	No relevant documents identified.	03/26/2019	0
Internet - National Academies Press (NAP)	Waste management and retrieval reports, a plutonium disposition report, and an environmental management report.	06/24/2015	9
Internet - National Institute for Occupational Safety and Health (NIOSH)	Periodic reports on residual radioactive and beryllium contamination at covered facilities, and the Advisory Board on Radiation and Worker Health review of the NIOSH WVDP site profile revision 1.	04/22/2019	4
Internet - National Service Center for Environmental Publications (NEPIS), US EPA	Environmental radiation protection, environmental radionuclide studies, ingestion dose pathways, and a report on the low-level radioactive waste burial site.	12/17/2014	6
Internet - NRC Agencywide Document Access and Management (ADAMS)	U.S. spent fuel inventories, FUSRAP site reviews, environmental radiation in New York State reports, DOE spent fuel management programs, DOE request to place low-level waste at Nevada Test Site, decommissioning program annual reports, characterization and decommissioning plans, safety analysis reports, NRC site visit reports, audits, periodic operational reports, WVDP quality assurance program, Hanford and Yucca Mountain high-level waste handling plans, NRC observations and responses, draft and final environmental impact statements, reviews of waste treatment plans, safety evaluation reports, high-level waste profiles, summary plutonium and uranium recovery report, technical evaluation reports, dose modeling, and mitigation of contaminated groundwater.	08/30/2018	337
Internet - Oak Ridge National Library	Periodic division reports, solvent stability in nuclear fuel reprocessing, and methods for decladding light water reactor fuel.	11/21/2016	7
Internet / SC&A	Technical specifications of the West Valley NRC license.	06/05/2006	1

Data Capture Information	Data Capture Description	Date Completed	No. Uploaded into SRDB
Internet - US Army Corps of Engineers (USACE)	No relevant documents identified.	04/17/2019	0
Internet - US Transuranium and Uranium Registries	No relevant documents identified.	04/16/2019	0
Kansas City Plant	Radioactive waste management and site treatment plans.	03/04/2015	2
Lawrence Livermore National Laboratory	A Radiation Safety Program records list.	10/01/2015	1
Lewiston Public Library	Documentation of the transfer of Lake Ontario Ordnance Works residues to West Valley.	03/31/2009	1
Marriott Hotel - Buffalo NY	An advocacy newsletter referring to the proposed placement of radioactive waste at West Valley.	04/18/2005	1
Massachusetts Department of Public Health	A statement on the similarities of the Nuclear Metals, Inc. and West Valley financial situations.	04/12/2012	2
Mel Chew & Associates	Recycled uranium reports.	12/14/2014	14
Missouri Department of Natural Resources	Plutonium working group reports.	10/01/2008	3
Mound	Radiation exposure reports and personnel contamination incidents.	03/26/2007	9
Mound Museum	Mound employee newsletters.	05/18/2010	2
National Archives and Records Administration (NARA) - Atlanta	An Oak Ridge Operations Office health review and results of the DOE indoor radon study.	08/09/2004	2
National Archives and Records Administration (NARA) - College Park	A 1974 trip report to Battelle Pacific Northwest Laboratory.	04/16/2010	1
National Archives and Records Administration (NARA) - Kansas City	High-level waste reports, decontamination reports, a radiation shielding analysis, waste management plans, transuranic waste reports, environmental reports, field measurements, and periodic reports.	07/12/2016	46
National Archives and Records Administration (NARA) - Seattle	1969 environmental TLD records and incident reports.	12/17/2014	4
National Institute for Occupational Safety and Health (NIOSH)	Annual reports to Congress, recycled uranium, a claimant communication, and worker outreach agendas, sign-in sheets, presentations, and minutes.	11/22/2017	26
NIOSH OCAS Claims Tracking System (NOCTS)	The 1981 history of site decontamination.	05/02/2017	1
NIOSH / SC&A	The DOE Ohio Field Office recycled uranium project report.	08/14/2003	1
Nevada Test Site	The final NTS environmental impact statement with quantities of West Valley radioactive waste shipped to the site.	10/01/2003	1
New York Department of Environmental Conservation	A uranium mill tailings report.	03/05/2007	1
Nuclear Fuel Services, Erwin, TN	The rationale behind spent fuel reprocessing and a summary of spent fuel receipts and reprocessing.	03/23/2006	5
Nuclear Regulatory Commission Public Document Room	NRC licenses SNM-124, CSF-1 with correspondence and supporting documentation, high-level waste reviews with comments, review of the long-term waste management plan, review of the transuranic waste certification plan, safety analysis reports, the WVDP project plan, environmental monitoring reports, trip reports, review of site closure documents, offsite dose limits, periodic operational reports, material control and accountability, the waste form qualification review, audits, safety evaluation reports, environmental assessments for waste classes, certificates of compliance, and geologic and hydrologic research.	04/24/2018	246

Data Capture Information	Data Capture Description	Date Completed	No. Uploaded into SRDB
Nuclear Regulatory Commission Public Document Room / Lee's Summit FRC	A vitrification progress report, radiological parameters for the assessment of project activities, an environmental monitoring report, and a project plan progress report.	12/17/2014	4
Oak Ridge Associated Universities (ORAU)	A nuclear weapons databook, environmental radiation in New York in 1972, and the 1967-1981 West Valley radiation exposure database in spreadsheet and pdf formats.	07/18/2018	4
Oak Ridge Institute for Science and Education (ORISE)	Chelation DTPA data for DOE employees.	08/06/2009	3
Oak Ridge Library for Dose Reconstruction	A review of public health data around nuclear facilities and gaseous effluent control technology.	04/05/2011	2
Oak Ridge National Laboratory (ORNL)	A computer program for calculating neutron production in high-level waste.	11/29/2004	1
ORAU Team	Technical basis documents, excerpts from claim files, and documented communications.	06/16/2017	15
Paducah Gaseous Diffusion Plant	Radiation exposure summaries and Health Physics audits.	12/03/2008	10
Personal Files - Jack Selby	Annual DOE radiation exposure reports.	10/11/2006	6
Richland Library	A process building closure engineering report.	10/01/2018	1
Savannah River Site	A compliance assessment, material transfer receipts, and a 1997 Price-Anderson annual report.	08/23/2017	3
S. Cohen & Associates (SC&A)	2010 records search results, plutonium, actinide, and uranium analysis procedures, West Valley Nuclear Services Company and West Valley Environmental Services policy and procedures, controlled documents, radiological assessment of environmental releases manual, several revisions of the internal dosimetry program manual and TBD, dissolver criticality studies, Nuclear Fuel Services surveys, spent fuel reprocessing plant operation, 1969 safety and health manual, potential exposures from radiation streaming, unusual occurrence reports, radiation protection periodic reports, review of the WVDP internal dosimetry program, review of radiation work permits for bioassay requirements, bioassay records, reviews of the bioassay program, DOELAP reviews, AEC license SNM-857, environmental monitoring reports, safety analyses, periodic health and safety reports, fuel processing campaigns, uranium-232 content in irradiated uranium, and radiation contamination status reports.	07/18/2014	541
SC&A / INL	The preparation of uranium-233 oxide for the breeder reactor program, a radioactive waste management plan, and environmental information.	06/24/2010	3
SC&A / Internet - DOE OpenNet	A historical plutonium report.	10/28/2014	1
SC&A / Lee's Summit FRC	The review of the WVDP bioassay and internal dosimetry program, a 1989 whole-body dosimeter study, and calibration source data for the in vivo counter.	02/11/2016	3
SC&A / Pinellas Plant	The 1993 waste generation and minimization report.	06/24/2010	1
SC&A / Santa Susana Field Laboratory	A trip report to Argonne National Laboratory.	06/24/2010	1
SC&A / West Valley Demonstration Project	Uranium and tritium analytical procedures, validation of indirect bioassay data, stack air effluent monitoring, entry into and exit from contamination areas, waste stream characterization, Radiological Procedures RC-1 - RC-74, Radiological Control ADM Procedures RC-ADM-1 - RC-ADM-42, Radiological Control DOS Procedures RC-DOS-1 - RC-DOS 18, RC-DOS-20 - RC-DOS-55, RC-IOC Procedures RC-IOC-1 - RC-IOC-62, RC-EMRG-1, RC-RPO-301, RC-RPL-7, and RIR-403 Procedures RIR-403-001, RIR-403-003 - RIR-403-011, RIR-403-013 to RIR-403-024, RIR-403-026 - RIR-403-038.	05/06/2011	441

Data Capture Information	Data Capture Description	Date Completed	No. Uploaded into SRDB
SC&A / West Valley Demonstration Project / Lee's Summit FRC	In vivo counting procedures, gamma and neutron dose rate evaluations, air sampling guidelines and action levels, skin dose assessment, TLD element correction factors, performing in situ soil measurements, operating and calibration instructions for a liquid monitoring system, and a quarterly area radiation monitors alarm check.	05/06/2011	15
Southern Illinois University	The 1964 minerals yearbook.	10/29/2008	1
University of Rochester	Shipments of radioactive waste to West Valley.	08/20/2008	1
Unknown	Historical summaries and information, material transfers, the 1995 DOE occupational exposure report, various correspondence, and mixed waste disposal.	11/12/2004	22
Unknown / SC&A	Results of the DOE indoor radon study.	10/09/2003	1
West Valley Demonstration Project / Lee's Summit FRC	Environmental reports, ambient air concentrations, bioassay reports and procedures, decontamination reports, an operational event, a facilities utilization plan, and lessons learned.	11/17/2010	14
West Valley Demonstration Project / NRC Public Document Room	A 1983 summary environmental monitoring report.	06/05/2006	1
West Valley Demonstration Project / SC&A	In vivo counting procedures, in vitro counting procedures, airborne radioactivity sampling procedure, spread of contamination, environmental results, internal dosimetry programmatic documents, area dosimetry, an unusual occurrence report, and periodic radiological reports.	11/17/2010	29
TOTAL	N/A	N/A	11,759

Table A1-2: Database Searches for West Valley Demonstration Project

Database/Source	Keywords	No. of Hits	No. Uploaded into SRDB
Defense Technical Information Center (DTIC) http://www.dtic.mil/dtic/ COMPLETED 03/22/2019	Database search terms are available in the Excel file called “West Valley Demonstration Project (WVDP) Rev 00 (83.14), 05-13-19.”	464	1
DOE Hanford Declassified Document Retrieval System (DDRS) and Public Reading Room http://reading-room.labworks.org/Catalog/Search.aspx COMPLETED 04/05/2019	Database search terms are available in the Excel file called “West Valley Demonstration Project (WVDP) Rev 00 (83.14), 05-13-19.”	0	0
DOE Legacy Management Considered Sites https://www.lm.doe.gov/Considered_Sites/Summary/ COMPLETED 04/18/2019	Database search terms are available in the Excel file called “West Valley Demonstration Project (WVDP) Rev 00 (83.14), 05-13-19.”	238	14

Database/Source	Keywords	No. of Hits	No. Uploaded into SRDB
DOE National Nuclear Security Administration (NNSA) - Nevada Site Office https://nnsa.energy.gov/library COMPLETED 03/28/2019	Database search terms are available in the Excel file called "West Valley Demonstration Project (WVDP) Rev 00 (83.14), 05-13-19."	1,233	0
DOE OpenNet http://www.osti.gov/opennet/advanced-search.jsp COMPLETED 04/16/2019	Database search terms are available in the Excel file called "West Valley Demonstration Project (WVDP) Rev 00 (83.14), 05-13-19."	132	78
DOE OSTI SciTech Connect (now OSTI.GOV/Search) https://www.osti.gov/search/ COMPLETED 04/10/2019	Database search terms are available in the Excel file called "West Valley Demonstration Project (WVDP) Rev 00 (83.14), 05-13-19."	190,382	577
Energy Employees Claimant Assistance Project (EECAP) http://www.eecap.org COMPLETED 03/26/2019	Database search terms are available in the Excel file called "West Valley Demonstration Project (WVDP) Rev 00 (83.14), 05-13-19."	0	0
Google http://www.google.com COMPLETED 04/24/2019	Database search terms are available in the Excel file called "West Valley Demonstration Project (WVDP) Rev 00 (83.14), 05-13-19."	7,173,638	178
Health Physics Journal http://journals.lww.com/health-physics/pages/default.aspx COMPLETED 03/26/2019	Database search terms are available in the Excel file called "West Valley Demonstration Project (WVDP) Rev 00 (83.14), 05-13-19."	27	0
International Journal of Occupational and Environmental Health https://tandfonline.com/search/advanced COMPLETED 03/26/2019	Database search terms are available in the Excel file called "West Valley Demonstration Project (WVDP) Rev 00 (83.14), 05-13-19."	1	0
National Academies Press http://www.nap.edu/ COMPLETED 04/16/2019	Database search terms are available in the Excel file called "West Valley Demonstration Project (WVDP) Rev 00 (83.14), 05-13-19."	29,272	9
National Service Center for Environmental Publications (NEPIS) http://nepis.epa.gov/ COMPLETED 04/18/2019	Database search terms are available in the Excel file called "West Valley Demonstration Project (WVDP) Rev 00 (83.14), 05-13-19."	19,368	12
NRC ADAMS Reading Room https://adams.nrc.gov/wba/ COMPLETED 04/16/2019	Database search terms are available in the Excel file called "West Valley Demonstration Project (WVDP) Rev 00 (83.14), 05-13-19."	2,632	334
United States Army Corps of Engineers (USACE) http://www.usace.army.mil/ COMPLETED 04/17/2019	Database search terms are available in the Excel file called "West Valley Demonstration Project (WVDP) Rev 00 (83.14), 05-13-19."	1,000	1

Database/Source	Keywords	No. of Hits	No. Uploaded into SRDB
U.S. Transuranium & Uranium Registries http://www.ustur.wsu.edu/ COMPLETED 04/16/2019	Database search terms are available in the Excel file called "West Valley Demonstration Project (WVDP) Rev 00 (83.14), 05-13-19."	0	0