
Draft White Paper

**REVIEW OF THE WORKER COMMENTS FOR THE MAY 22, 2008,
SAVANNAH RIVER SITE (SRS) WORKER OUTREACH MEETING
AND PETITIONER SUPPORTING MATERIAL**

Contract Number 200-2009-28555

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Record of Revisions

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INTRODUCTION

At the Savannah River Site (SRS) Work Group meeting on May 5, 2010, a petitioner representative suggested that the Work Group consider information from two worker outreach meetings conducted in North Augusta, Georgia, in May 2008 (NIOSH 2008). Information provided in the meetings addresses the adequacy of radiological controls and personnel monitoring for several groups of SRS workers, topics which are relevant to data adequacy and completeness. The petitioner representative is not assured that NIOSH has considered this information in their evaluation of the Special Exposure Cohort (SEC) petition or during the petition appeals process. The petition Evaluation Report (ER) indicates that one set of meeting minutes had not been posted to the Site Research Database (SRDB) and one set had not been released by the Department of Energy (DOE) when the ER was completed.

The Work Group tasked S. Cohen and Associates (SC&A) with analyzing the workers' statements, identifying issues of concern, and comparing worker concerns with matrix issues from *Issues Matrix for the Savannah River Site SEC Petition and Petition Evaluation Report* (SC&A 2009) to determine the extent to which these concerns have been addressed (ABRWH 2010a). SC&A also reviewed worker comments from the petition presentation at the *Advisory Board on Radiation and Worker Health: 60th Meeting*, held in Augusta, Georgia, in December 2008 (ABRWH 2008) and additional documents provided by a petitioner representative.

COMMENT ANALYSIS

SC&A reviewed the documents and recorded worker comments in a spreadsheet. Separate tables were prepared to capture worker comments from the Worker Outreach meetings and those obtained through other sources. Although SC&A preserved statements covering similar issues with significant overlap, duplication of the same statement in both tables was avoided. Claim-specific statements from the petitioners' material and comments not relevant to EEOICPA Part B (primarily related to chemical exposures) were excluded from this analysis.

Attachments 1 and 2 of this memo contain the worker statements compiled for this evaluation. Attachment 1 contains comments derived from the May 22, 2008, worker outreach meetings, and Attachment 2 contains comments derived from the petitioner presentation and other sources provided by the petitioner representative. Each entry includes a description of the worker's comment, the type of worker communicating and/or impacted by the issue (e.g., construction, operations, general population, not specified), and an indication of correspondence with matrix issue(s) and/or supplemental issue(s). Attachment 2 also contains a source reference, because the comments in this table were drawn from multiple documents.

Correlation of worker concerns with SRS matrix items (SC&A 2009) was difficult. Some issues correspond well to existing matrix items. Some issues are very similar in substance, but include situations and worker groups that are not encompassed by the matrix issue description. The matrix item(s) most closely reflecting the nature of the worker's concern were entered for these items. A significant number of worker comments may fall outside the scope of current matrix issues, but this may not become clear without further consideration. For instance, it is not clear from some worker comments whether an internal or external dose issue was involved. There are

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matrix items relating to both. As another example, the internal dose adequacy questions may relate to specific situations involving radionuclides for which NIOSH has said it is preparing coworker models, but it is not possible to determine this at the present time. We have used the following supplemental issue codes to categorize these issues:

- S1 Radiological controls (e.g., HP coverage, contamination control, personal protective equipment, radiological postings)
- S2 Destruction or loss of records
- S3 Scope of the evaluated class
- S4 Internal dosimetry data adequacy
- S5 Other (radiological training, unequal status, retaliation, general information)

It is unclear to what extent groupings S1, S2, S4, and S5 would be SEC issues. In regard to issue S3 in the list above (the scope of the evaluated class), SC&A has been authorized to make comments on issues that may relate to dose reconstruction feasibility for non-construction workers, provided they arise in the context of the construction worker SEC review (see below).

Other codes entered in the “Matrix Item” column of Attachments 1 and 2 indicate worker comments that are relevant to EEOICPA Part B, but are not related to SEC issues:

- DOL Department of Labor issue (e.g., employment records)
- TBD/DR Issue related to technical basis document (TBD) and/or dose reconstruction (DR) process
- WO Worker Outreach (WO) / NIOSH responsiveness

SUMMARY

Participants in the May 2008 worker outreach meetings describe a number of concerns, citing specific examples of situations affecting diverse types of workers. Many similar concerns were raised for construction workers and non-construction workers. In many cases, it was difficult to determine whether or not the workers involved were monitored for external or internal exposure. Issues raised at the worker outreach meetings generally fall within the following categories:

- The adequacy and completeness of internal and external monitoring data
- Radiological incidents and unusual occurrences
- Lack of radiological controls or characterization
- The scope of the evaluated SEC class

In addition to these concerns, documents provided by the petitioner representative communicate frustration with NIOSH’s responsiveness to worker input, which is closely linked to their decision to restrict the evaluated class. Petitioners have been told that they have not presented sufficient evidence to qualify non-construction workers for evaluation, but the workers feel that the evidence they have provided (particularly the statements offered at the May 2008 worker outreach meetings) was not given adequate consideration. NIOSH has stated that, “during that

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two-day meeting there wasn't any information provided that we felt would qualify production workers for inclusion in the class during that time period" (ABRWH 2010b, pp. 20–21). The petitioner representative maintains that the review panel denied due process by failing to perform an independent evaluation of the workers' statements and NIOSH's conclusion. This issue is beyond the scope of SC&A's review mandate. Since the issue of independent review may also be beyond the scope of the SRS Work Group to evaluate, the SRS Work Group might consider forwarding this issue to the Worker Outreach Work Group, since there appears to be a different interpretation of the input during the May 8, 2008, meeting on this issue by the petitioner representative and by NIOSH. As an alternative, the SRS Work Group might consider advising the petitioner representative of some other appropriate channel for seeking resolution of this concern.

As regards the scope of the ER, it is SC&A's understanding that the ER did not cover non-construction workers because they were not part of the qualified SEC petition. This issue was discussed at some length during the January 19, 2010, SRS Work Group meeting. Specifically, the SRS Work Group asked SC&A to comment on non-construction worker issues if they came up in the course of construction worker issues. NIOSH stated that it would be open to modifying the scope of the SEC, should the situation indicate that that was warranted (ABRWH 2010b, pp. 11–27 and pp. 70–77).

In the context of this report, SC&A notes that it has begun identifying non-construction worker dose reconstruction issues as they come up during the construction worker SEC review. We have done that in the review (SC&A 2011) of NIOSH's supplement to the Evaluation Report (NIOSH 2010). However, evaluating the technical merits of issues concerning non-construction workers outside of the context of the construction worker SEC review is beyond the scope of SC&A's current authorization. This report simply compiles the worker comments and attempts to associate them with existing matrix issues, in accordance with the Work Group's request. As with other issues in the S1 to S5 list, SC&A is not making any conclusions at this time about their potential to be SEC issues to the extent that they do not overlap with existing issues in the SRS SEC matrix (SC&A 2009).

Issues of exposures to the public and to non-DOE, non-contractor or sub-contractor personnel were also brought up by petitioners, their representatives, or in the May 2008 meeting. These are also noted for completeness. The population that may have been exposed according to the comment is also noted. Evidently, neither of these belongs in a list of SEC issues.

REFERENCES

ABRWH (Advisory Board on Radiation and Worker Health) 2008. *Transcript of the 60th Meeting of the Advisory Board on Radiation and Worker Health*, December 16, 2008, pp. 215–241.

ABRWH (Advisory Board on Radiation and Worker Health) 2010a. *Transcript of the Savannah River Site Work Group Meeting of the Advisory Board on Radiation and Worker Health*, May 5, 2010, pp. 336–342.

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ABRWH (Advisory Board on Radiation and Worker Health) 2010b. *Transcript of the Savannah River Site Work Group Meeting of the Advisory Board on Radiation and Worker Health*, January 19, 2010.

[Redacted] 2010. E-mail from [Redacted] (Petitioner Representative) to K.A. Robertson-DeMers (SC&A), *Subject: Incidents and Test Reactors at SRS*, [Redacted] Offices of [Redacted], P.A., Black Mountain, North Carolina, March 16, 2010.

DOL (Department of Labor) 2005. Transcripts of Proceedings, Department of Labor, Department of Energy Employees Occupational Illness Compensation Program, North Augusta, South Carolina, March 17, 2005. [See Exhibit 9.]

NIOSH (National Institute for Occupational Safety and Health) 2008. *Transcript of the SEC Worker Outreach Meeting for the Savannah River Site (SRS)*, May 22, 2008 (1:00 p.m. and 6:00 p.m. meetings).

NIOSH (National Institute for Occupational Safety and Health) 2010. *SEC Petition Evaluation Report Petition SEC-00103, Addendum*, April 28, 2010.

SC&A 2009. *Issues Matrix for the Savannah River Site SEC Petition and Petition Evaluation Report*, SC&A, Inc., Vienna, Virginia, and Saliant, Inc., Jefferson, Maryland. September 2009.

SC&A 2011. Joyce Lipsztein, *SC&A review of the NIOSH Addendum to the Savannah River Site Special Exposure Cohort (SEC-00103) Evaluation Report*, S. Cohen & Associates, Vienna, Virginia, January 2011.

SEC Petition, 2007. *Special Exposure Cohort Petition for the Savannah River Site, SEC-00103*, November 2007. [See Exhibit 9]

[Redacted] 2010. Letter from [Redacted] (petitioner representative) to M. Griffon (ABWRH), *Re: Documents/Statements Not Used in Review*, [Redacted] Offices of [Redacted], P.A., Black Mountain, North Carolina, April 22, 2010.

[Redacted] 2008a. *Request for Review of Proposed Finding, For SEC Tracking Number: SEC00103*, April 23, 2008.

[Redacted] 2008b. *Request for Administrative Review of Findings For SEC Tracking Number: SEC00103*, July 31, 2008.

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ATTACHMENT 1: WORKER COMMENTS FROM MAY 22, 2008, WORKER OUTREACH MEETINGS (NIOSH 2008)

Matrix Item	Worker Type	Description
9	General	HP said workers had annual whole-body count & urine bioassay "regularly" if they worked around tritium. Working in a rad zone requiring plastic suits, they left a urine sample each day and had handheld devices to frisk when exiting rad zone. Workers in clean areas left a sample weekly or monthly.
9/23	Construction Worker (CW)	In 100K Area, workers walked right across the "swimming pool" over spent fuel rods to get to their shacks every morning.
12	CW	[Redacted] stated that he sometimes had nasal smears or oral swipes or gave urine samples if the monitors or alarms went off in "hot canyons," but there were also instances when an HP was not present to monitor.
12	CW	1950s spill incident. All personal belongings were confiscated. Worker detained for decontamination for 24 hr after incident. No record of incident or worker's exposure. Co-worker thought spill was covered up because it affected the water supply.
12	CW	When filters were taken off old tanks, alarms went off. CWs were told that a power surge had caused it. Alarms were reset, and CWs were told to get back to work.
12	CW	Surveyors had boat in L Area pond using prism rod in the water. Water would get all over them when they brought the rod back in boat. Monitors went off as they left the area, because their prism rod became contaminated.
12	CW	CW/claimant did not receive written records of incidents in which he was involved.
12	CW	Contaminated water spilled on parking lot & highway when workers moved a pump from H Area waste storage with inadequate seal. A worker drove his company truck into the same area & was told to leave, but he was not monitored & his truck was not checked. The contaminated parking lot and the road were excavated and replaced.
12	General	Several attendees agreed that it was common for an HP to say the equipment was broken if an alarm went off or if a hand and foot scan showed contamination.
12	General	Someone took pallet of tools painted for RZ areas (indicating not to be removed from rad zone) to Central Shops for repair. Shop workers left area & called in HP to survey. Tools sat on pallet 3 weeks before workers in plastic suits bagged them to take to burial ground. [Redacted] men who had handled the tools were deconned at HP office in Central Shops. No knowledge of bioassay samples. ~1992–93
12	General	Working on welding machines in maintenance shop. Blew off dust w/air hose before finding out it was contaminated - 2 machines were sent to burial grounds. Two crews of electricians in shop, no bioassay or nasal smear. Central Shops was considered clean area - primarily for fabrication.

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Matrix Item	Worker Type	Description
12	Not Specified	1979 air reversal/intake - It was common practice to replace experienced hood operators on 221-H B-line w/less experienced operators as they neared 2R annual exposure (3R/yr limit). Less experienced crew failed to verify absence of Pu in hoods before opening barn doors to bring in crane, causing air reversal. Field HP took nasal smear - worker was not informed of final result. No special bioassay - worker was on routine monthly program. Worker had occasional chest counts when working in 700 area, but did not know what they were looking for.
12	Not Specified	[Redacted] did not want incident recorded [1979 air reversal on 221-H B-line], because he didn't want to look bad. HP documented in log book. Months later, HP's logbook was stolen (forced entry into locked desk) while he was away with [Redacted].
12	Not Specified	Escort went with AT&T workers to do maintenance in 105 C reactor area. A worker dropped a box of wire in the water; alarms went off when he pulled it out. Workers were removed so alarms could be shut off; they were sent back in about 15 minutes later without PPE or TLDs. This occurred in late 1980s or early 1990s.
12	Not Specified	A test was shut down after the 1 st run because U oxide solution had melted PVC pipes and gotten all over the floor. Instead of going out to H waste area, the waste backed up into the sludge pump. The entire building was shut down. After several years, the building was demolished and the area was paved over.
12	Not Specified	Contaminated water spilled out of a heat exchanger onto workers during change-out.
12	Not Specified	Contaminated worker [K Area Reactor] waited 30 minutes for HP to show up after setting off alarm on exit monitor.
12	Operations	RCTs surveying & monitoring work sites were often exposed to elevated levels of contamination before they were properly protected. Survey, discover problem, withdraw to don appropriate PPE and respiratory protection.
12	Operations	Alarms went off all the time. Workers were told that if they left the area for a time and the all clear was given, they were free to go back to work. If the alarms went off again, they were to contact an HP, but it was sometimes difficult to find one.
12	Operations	RCT was called in to respond to incidents. Events are not mentioned in the RCTs' dose records.
12	Operations	Large volume of "hot" water spilled on worker unloading spent fuel from railcars. Night shift - no HP. ~1963–1964. Changed & showered - does not remember testing.
12	Operations	Incident - contaminated/leaking cooling lines in Area F Tank Farm. RCT surveyed; contamination exceeded RWP limits. Submitted bioassay & nasal smears, but results are not in dose record.
12	Operations	Incident - H Area Tank Farm. [Redacted] RCT present with Operations workers changing filter on sampling system. An operator opened a valve that diverted some waste in the wrong direction. Sludge dumped on ground outside building, set off area rad monitors. After using step-off pad, removing PPE & respirators per procedure, they realized higher contamination was where they were standing (instruments off scale). Major incident, documentation, bioassay, nasal & saliva smears, DOE critiques. DOE documents not available to workers who were involved. No mention in personal files.

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Matrix Item	Worker Type	Description
12	Operations	A railcar loaded with spent fuel rods derailed and tore up the tracks. [Production] workers were kept from the area until the track was rebuilt. To the best of his knowledge, the incident was not recorded.
12	United States Forest Service (USFS)	No record of incident when HPs told foresters to leave contaminated stream, even though HPs took their boots because of contamination.
12	USFS	Unmonitored foresters were in a contaminated stream "cruising" timber down to storage location. No warning signs - HPs passing by told them to get out of stream. HPs took their boots because of contamination. Don't remember if bioassay was collected. Did not recall nasal smear or other samples taken.
12/13	CW	1987 release in H Area. Production workers evacuated to parking lot for several hours, some were taken to Medical for treatment. CWs in S Area - separated only by chainlink fence, continued to work without protection during the evacuation and were never told specifics of the release.
12/13	General	Insulators were dispatched to any area where repairs were needed, ruptured line in Tank Farm, "3", "7", anywhere. Most work orders were for problems. Tanks were buried - workers would only be down around them if a leak or other problem required attention. If buried tank was leaking, Tank Farm personnel [Prod Workers?] would dig up the problem; insulators (CWs) would report to fix it.
12/DOL	Subcontractor	Subcontracted worker became contaminated while escorting [Redacted] CWs who worked on pipes in K Reactor for about 30 min. Set off alarm at exit monitor. The [redacted] was taken to HP for decontamination that lasted nearly 7 hours. Allowed to go home after several showers and a "normal" scan with a hand monitor, but they confiscated all of his personal belongings. DOE has not found any of his records or a report of the incident. Had difficulty verifying employment for claim until he produced pay stubs.
14	CW	CWs assisted riggers changing out massive heat exchangers. Huge undertaking to rig heat exchangers to get them out of the reactor area. "Hot" work without any records.
14	General	HPs tried to keep workers <150 mR/month. There were times when that limit could be exceeded in less than an hour.
14	General	Worker commented that they were trying to get bldg [Bldg 235] in safe mode since it was shut down. They figured if the bldg was involved in a fire, "we would all get 300 R in just a few minutes and not even have to go in there - they left so much in the building."
20	General	Tank top shielding - half-moon shaped lead shields covered the piping on the "hot tanks." In response to a question about breaks or gaps, workers said the shields were "bumped together."
20	General	In Tank Precipitation (ITP) facility: highly contaminated liquid waste from B Line and Canyons was stored in million-gallon tanks until it went through vitrification process. Radiation levels were very high in this area.
21	CW	SRS maintenance personnel (who were monitored) often took unmonitored CWs with them on jobs around the site.

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Matrix Item	Worker Type	Description
21	CW	CWs were often unmonitored (no dosimetry badges) while working in areas where SRS employees wore TLDs. CWs may have had pencil while other workers had TLDs.
23	CW	Installed new tanks in deep hole by old tanks full of rad waste. Worked unmonitored 50-60 feet below ground level for long period of time.
23	CW	They got daily dose rate cards & pencil dosimeters. Argued with HP to have it calibrated to "0". A worker had a TLD as well, but did not trust it - it never left the site (left hanging on board when worker left) and he never saw any reports.
23	CW	1978, installing 6 new tanks in H Area. Workers in vicinity, but outside the immediate operations area, were not issued TLD or any other monitoring.
23	General	Pencils often read off scale while working on top of tanks. Workers were often told that they must have bumped it. Explanation does not seem to account for situations when many workers in the same location had offscale readings at the same time.
23	General	Pencil dosimeters at Tank Farms gave inconsistent results - [redacted] electricians working very short distance from each other - dosimeter readings would differ by >250 mrem in a matter of seconds. Under drought and dusty conditions, readings were elevated; when it rained and dust settled, readings went back down to 0.
23	Not Specified	Worker is concerned about multiple gaps of 1–3 years in his radiation exposure records
23	Operations	[Redacted] worker 1955–1963 was sent out to various areas. Went to radiation areas to deliver paychecks, etc. Did not have routine badge - got visitor badge to enter certain areas. No records were provided for the visitor badges (when worker was most likely to be exposed).
23	Operations	Workers picked up film badge at gate at beginning of shift. They would go right in (assume they didn't need a badge) if supervisor not there. Guards let them in on security badge - not checking for film badge.
23	Operations	Workers did not have film badges on weekends - they were collected Fri p.m. and returned Sun p.m. or Mon a.m. Nobody seemed concerned that shift workers did not have badges during that time. During the week, wearing film badge seemed to be optional - supervisors never asked why someone was not wearing their badge.
23	Subcontractor	Subcontracted employee (cleaning company, escort) had great difficulty getting his records from DOE. When he did obtain a radiation badge, he never received any reports of his dosimeter readings.
23	Subcontractor	Subcontractor employees were not routinely issued TLDs for years, even after they began to receive rad safety training ~mid-1980s. After taking classes, a worker was aware that he was going into radiation zones - finally requested a badge on his own.
23	USFS	Foresters had no PPE or film badges. Opening source at night to test rad effects on vegetation.
23/S1	CW	Common practice for trades workers to go to Central Shops or scavage needed materials from other areas. Not monitored, often no one was aware that they were in the radiation area.

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Matrix Item	Worker Type	Description
23/S1	CW	R Area (had been shut down) - unmonitored CWs would go into buildings there to cannibalize parts needed for jobs. Person who made comment was not personally involved and did not know if workers had HP coverage.
23/S1	CW	All new construction worksites at S Area and Naval Reactor Area were right next to radiation areas and buildings, yet none of the CWs were monitored because the new construction was "clean."
23/S1	General	Supervisor sent [redacted] workers to HP Dept to have dosimeters read after they went off scale. HP told them they had bumped them, and they should go back to work. Individual had to insist that HP take a counter to Tank Farm to survey.
23/S1	Not Specified	Escort took AT&T worker into evacuated/contaminated trailer to tag and remove contaminated telephone equipment. No PPE or TLDs.
23/S3	Not Specified	Truck drivers and employees who serviced vending machines are excluded from proposed SEC class. Worker serviced vending machines in 10 areas, including F, H, P, K, and 708 (1977–1981). Special security badge for access. Never monitored/badged.
23/S3	Operations	Escorts accompanied CWs and outside maintenance workers who did not have clearance. They went everywhere the contractors went, because they were required to keep within sight. Escorts had no PPE or TLDs.
23/S3	Subcontractor	Subcontracted cleaning company employee worked in K Reactor area and delivered cleaning supplies to 16 different areas around the plant. Never wore film badge or TLD. Late 1970s–early 1980s.
23/S4	General	How can NIOSH use co-worker data for administrative staff if no records were kept?
23/S4	Operations	[Redacted] Operator working in R Area in 1950s was responsible for picking up SWP clothes left in barrels at step-off pad in the RDZ. HP with Geiger counter accompanied him to check the clothing. If hot - clothing was tagged for pickup and taken to burial ground. If not hot - it was sent to laundry. Worker was not monitored or assayed because it was the first reactor.
23/S4	Operations	Clerical worker did not get radiation training, give bioassay samples, or regularly wear a TLD, even though coworkers did, because they went into Fabrication Laboratory. [Redacted] was told [redacted] did not need to participate, because she was a clerical worker. [Redacted] adjacent to Fabrication Lab had no barrier at ceiling level. Workers in lab were fully dressed out; admin worker could talk to tech from hallway through door with vented panel.
23/S4	Operations	Mechanics were like CWs - did not work in specific location, in and out of hot areas. E&I Mechanic did not have badge or bioassay in 400 Area - believes dosimetry records were not kept for that Area - many gaps in his dosimetry records. Mechanic serviced equipment in [redacted], where they reprocessed deuterium. Did use hand & foot monitor there.
24	General	The most disturbing thing about NIOSH dose reconstruction is that, if dose data are not available from 1961, how can they assume that dose in documents they wrote after 2000? The modern HP program is much more thorough than it was during his employment.
25	CW	Surveyors walked through 2-mile swamp to K Area drainage ditch. Ate sourwood grass, blackberries, persimmons, pears that were growing on site. Ate lunches wherever they were - often did not have access to clean water to wash hands before eating.

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Matrix Item	Worker Type	Description
25	General	Plant found cutting oil in water system in 1980s. Problem with solvents/degreasers from 1950s–1960s getting into the aquifer. They tried to clean up with groundwater using steam injection. If the building was so contaminated it had to be demolished, DOE should have reports on contamination levels in the water over time, but he has not been able to get them.
25	USFS	Contaminated hardwood timber was burned. Softer timber, mostly pine, was chipped and buried. Some wood chippers were found to be contaminated and were sent to the burial ground.
25/S1	General	Workers often used disposable plates & utensils in cafeteria when dishwasher could not be operated due to contaminated water supply, but workers drank water from the same water supply on a daily basis. Statement was later corroborated by another participant.
S1	CW	In reactor areas, worker wore TLD and gave monthly samples. Biggest problem was not having HP around to help them stay out of problem areas. CWs are transient; often come & go w/out benefit of regular safety programs. Hurried in and out when brought in for "hot" jobs.
S1	CW	On B-line, there were always HPs around. At Tank Farms, only safety instructions came from RWP posted on the gate. RWP listed protective clothing and equipment needed for the job.
S1	CW	Often, electricians worked without the benefit of any monitoring personnel on their jobs.
S1	CW	Lax contamination control. Surveyors' prism rod was given back to them after it was found to be contaminated.
S1	CW	Installing pipe line in F Canyon in 1981. Did not wear any protective gear, because signs had been taken down and area appeared to be clean. Hazard signs were re-installed after they were done.
S1	CW	Concerned that there are no records, and safety practices were inconsistent. Worked without protection on roof of one building, but had to wear protective clothing & respirator on another building 1,000 yards away.
S1	CW	Unmonitored [redacted] operator working for subcontractor was told to dig under road to install a pipe. Using an auger to drill a hole under the road. After they'd already been digging, an HP told him the area was too contaminated to be digging.
S1	CW	Big difference in HP treatment of CWs and operations personnel. In some instances, warning signs were taken down before CWs were brought in to do a job and posted again when their job was done. Improved somewhat in Canyons in the 1980s, but unless CWs got to know somebody, most of the time there was no HP looking out for their safety. Trades workers relied on their more experienced co-workers to look out for them.
S1	CW	A CW said there was no HP coverage in reactor areas because HPs were too busy. Improved over the years. Workers did not remember seeing RWPs posted in reactor areas; did not have to sign in and out of work areas.
S1	CW	Tank Farms, late 1970s, tank tops being changed out to new design, trying to get sludge out of tanks. Inconsistent rad controls; workers often did not monitor themselves when leaving the area. No documentation to inform workers if area had been surveyed. If they went to trailer to ask about specific area, they were told it had already been checked out, but when they got to Tank Farm, there might be a big stack of lead that had not been there the day before.

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Matrix Item	Worker Type	Description
S1	CW	Late 1980s - workers often ate under a tree 10-15 feet from a train sitting in material storage area behind H Area. At one point, train was roped off and removed. Worker had leaned against train on several occasions, not knowing it was radioactive.
S1	CW	Stairwell up to 410 North is really crapped up. Workers were told to avoid walls & walk in middle of stairs. But several workers had drilled holes through 3" thick concrete walls in that stairwell to install conduit for security cameras & ID badge readers.
S1	CW	When irradiated slugs were transported from 100 Area to 200 Area, an HP walked along tracks and evacuated workers from shacks along the tracks to parking lots because cask cars were so "hot." Workers remained in parking lot until rail cars went in Canyon and doors were closed.
S1	General	HP coverage at H B-Line: Operational area 4th level H Canyon was ~4,000 sq ft, divided into several rooms, covered by 4 HPs who worked only there. Had CAMs.
S1	General	Heat exchangers from reactors were taken to Ford Building in Central Shops, overhauled (primarily boilermakers, few other crafts) over period of ~2 yr. Building was sealed and roped off afterwards - too contaminated to work in.
S1	General	Inexperienced RCTs were hired by Bechtel in 1989, trained for a short period, and sent out in the field to monitor workers' exposure. Workers had little confidence in these techs' ability to monitor or protect them. Popular sentiment - "That guy was bagging groceries last week, and now he's doing our radiation protection."
S1	General	HP coverage at Tank Farms 1970s–early 1980s. Worked under a standing RWP for 2-3 weeks and only saw an HP at the beginning of the job. Had gamma monitors in cages ~15 ft above each tank, no CAMs.
S1	General	Worked without protection in "clean" areas; no barriers between "clean" and "hot" areas.
S1	General	Inconsistent practices for removing plastic suits. Sometimes removed after workers left hot area, other times taken off right in the room if readings were high.
S1	General	Lack of adequate monitoring was a routine topic at safety meetings ~1989. HP may or may not be present while crew worked on a hot tank.
S1	General	Worker always checked "clean" laundry before dressing out, because sometimes "clean" coveralls were still "hot."
S1	General	After worker decontaminated masks, HPs & techs checked equipment and performed other maintenance. Not always closely checked. Detection equipment for checking cleaned masks did not work properly. They "had to be beaten against the wall to get them to work."
S1	General	Area outside Central Shops, welding machines from all over site came for maintenance. HP usually surveyed equipment prior to servicing, but machine may have been in yard several months. Workers in the area often leaned against machines that had not been surveyed.

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Matrix Item	Worker Type	Description
S1	General	Storage pit w/contaminated railroad ties discovered in F Area 1995. Safety procedures for moving ties from pit to burial ground - workers wore plastic suits. After that, SRS began removing contaminated ties from rail lines between the areas. Prior to discovery of contaminated ties, unmonitored foresters often gathered & burned ties discarded along tracks. They did not wear any PPE. Contamination is believed to come from material transported when R and K reactors came on line (1953), so workers were potentially exposed for years before discovery.
S1	General	There were times when contaminated areas were taped or roped off on lower level of building, where the canteen and supply room were located. Nothing but rope between contamination and workers.
S1	General	221 A-line was another "hot" building. Thick yellow uranium dust covered beams in that building as recently as the 2000 upgrade. A-line has been torn down except for 221-F. It is so hot they can't tear it down and it has to be monitored from outside the building.
S1	Not Specified	Line Department within Electrical Department maintained high voltage lines. When they pulled electric poles out of ground, underground part was often contaminated, esp. in F or H Area. Line crew pulled old electric poles at 105-C, cut up with chainsaw, put in rubbish containers to be removed from area. No HP coverage.
S1	Operations	Night shift at canyon area (unloading railcars of spent fuel). 20-30 people in building without supervision, protective clothing, or HP support.
S1	Operations	HPs were supposed to check laundry for radiation before it was washed, but sometimes piles of laundry would sit for days before the HP would come in & find that it was too contaminated to process. By that time, the laundry workers had already worked in it.
S1	Operations	Contaminated pests (cockroach, rodent) were found on separate occasions in proximity to work area of unmonitored clerical worker.
S1	Not a worker but a public exposure issue	Bechtel ~1989 set up Excess Yard in Central Shops for tools that were not in use. Members of public could purchase tools for fraction of commercial cost. Materials came from all over site, occasionally contaminated, so Bechtel started surveying tools before they left the yard.
S1	Not a worker but a public exposure issue	An individual purchased tools from SRS that were later found to be contaminated - apparently sold before being surveyed.
S1	Subcontractor	Subcontracted laundry workers often handled contaminated clothing and equipment without any protective gear, alongside DuPont workers who were at least partially protected. Rationale given was that DuPont workers were handling more contaminated items, but the subs were in immediate vicinity of these items. The only divider was a rope. Another participant stated that this laundry facility [F Area] has been torn down, and legacy hotspots were marked on the slab.

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Matrix Item	Worker Type	Description
S1	Subcontractor	An area had not been roped off when contractors installed new phone system in 1980s. They dug under RR tracks to access the building to put in phone system. No respiratory protection. Area was declared a CERCLA site soon afterward. Phone work eventually done under special permit. Ground had become contaminated from rain washing residue off drums of product that sat near tracks waiting (for days) to be loaded.
S1	USFS	Foresters did not have HP at their disposal unless one happened to come by the forestry office. Forestry supervisors were not apprised of contaminated materials that were carelessly left about the area. Example: big pipe full of smaller pipes sat behind USFS area for ~8-10 years.
S1	USFS	Unmonitored foresters worked in L Area to prepare a building site. Also ate lunch without washing hands (no facilities) and had no means of checking for contamination.
S1	USFS	In early days, unmonitored foresters cleaned equipment on a concrete pad near Central Stores. Pad was later found to be contaminated - workers hauling contaminated equipment to burial ground also used the same pad to clean their vehicles.
S1	USFS	Foresters cleared lumber from building site and prepared it for sale - worked on it for months without PPE or film badges to monitor their exposure. Prior to sale, HPs had to check the timber – foresters used chainsaw to harvest sample for HP to take to the lab. After working with the timber all that time, they found that it was too contaminated to sell.
S1/S4	Operations	Inventory workers in Central Shops were never monitored. Worked many years before learning that materials present in work area were contaminated - identified items were taken to burial grounds by employees in protective clothing. Sometimes material was present in area for days before HP surveyed and found it was contaminated.
S1/S4	Operations	Cleaning masks - washing machine & dryer. Use chemicals to decontaminate. Put on and breathe to verify working properly. Replaced filters, etc. Washed masks by hand - no way to know how hot they were. Worker did have film badge.
S2	CW	Many subcontracted employees have problems because DOE never received records for them.
S2	CW	CW/claimant was told that claim was in process 4-6 weeks ago. When he asked if NIOSH had requested records, he was told that DOE does not have the records.
S2	General	Destruction of records. Nov-1989 (DuPont/Westinghouse transition). Worker witnessed 2 crews of laborers who worked for 6-8 weeks destroying records from DuPont & subcontractors.
S2	Operations	Worker had monitoring records as lab worker, not as administrative worker. Medical records lost d/t Aiken County Hospital burning down.
S2	Survivor	Worker exposed in [redacted] - [redacted]. Wife requested records for claim and was told they could not be found.
S3	CW	Who is included in proposed class of CWs? Not all people doing construction-type jobs were hired through unions. Escorts had security clearance and accompanied workers who did not. Not classified as CWs, but required to be in immediate vicinity, keeping the CWs in sight at all times. Practice started late 1970s to early 1980s - construction boom, not enough CWs with Q clearance.

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Matrix Item	Worker Type	Description
S3	General	Some workers are not Construction or Production. Escorts, security guards, laundry workers, janitors, groundskeepers, foresters, others who were not directly employed by SRS.
S3	Operations	Unmonitored admin worker was sent into rad areas all over site to install computers. Limiting proposed SEC class to CWs is unfair to many other workers whose exposures are undocumented.
S3	Subcontractor	Subcontracted workers often worked in same areas as CWs, yet they are not covered in proposed SEC class.
S3	Subcontractor	Other types of workers should be considered, especially those hired by temporary agencies to perform short-term contracts as security personnel, laundry workers, cleaners, etc.
S4	General	HP area was painted twice a year; 300,000 dpm in area due to leaking expansion joints in equipment there. Trades workers went through that area regularly to get to their work area.
S4/WO	Not Specified	Worker was initially told there were no monitoring records for him. Long search & bureaucratic problems to obtain personal dosimetry records. When records were obtained, claimant found that he had [redacted] for Pu and 12 radionuclides - he had never been informed of this. Worker showed these records to "a NIOSH official" at a DOL Town Hall and was told that he never should have gotten those papers. Statement made it seem like a cover-up. [Discussion and input from other participants indicated that the "official" may have been a DOE representative.]
S5	CW	Common practice for SRS to bid "hot" jobs to construction trades so production workers did not have to do them.
S5	CW	Some earlier HPs had started as CWs and made sure they looked after their own. "Corporate mentality" began in 1960s when plant shifted toward more educated supervisors; shift caused CWs to be treated as a lower class of employees.
S5	CW	Safety training prior to 1989 was limited to what could be learned from a co-worker who may not have much more experience. Westinghouse and Bechtel (construction mgt) started formal training.
S5	CW	Lack of training was common for CWs because jobs are very mobile.
S5	CW	RZ painted tools coming to Central Shops was an example of communication and training deficits - the workers would not have taken them if they'd known the significance of the painted tools. CW is like a swinging door - workers come in for a short time, leave, come back six months later for another job. Many did not receive any radiation safety training. Workers in Excess Yard were often new hires waiting for clearance. Even when Bechtel started providing training, people hired to follow up on safety training often did not follow up with construction trades for several years. Improved by mid-1990s, because SRS safety personnel had become better trained by that time.
S5	CW	HPs fitted workers with full-face respirators, but they relied on co-workers to show them how to dress out. Training improved when Bechtel took over safety operations from Westinghouse.
S5	General	No formal training under DuPont (1951–1989). Many experienced workers left with them in 1989.

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Matrix Item	Worker Type	Description
S5	General	No official "dress out" training. Coworker would show you how. Learned years later at another facility that he should have sealed gaps between suit and gloves and boots.
S5	Operations	Production worker hired in 1961 had a short class on security and radiation when transferred to production area. Dull and "above his head."
S5	Operations	Main duties decontamination (including mask cleaning) - no formal training in how to perform duties.
S5	Operations	An HP issued Stop Work Order when they found contaminated railroad ties when remediating rubble pit. HP was fired for writing the order and his company was blackballed from bidding on future contracts for Westinghouse.
DOL	CW	D&D workers from late 1990s (tore down tower 400 Area) could not verify employment - subcontractor had gone out of business and not paid social security or income taxes.
DOL	CW	DOE could not find employment records for one of a CW's jobs (subcontractor).
DOL	Not Specified	Wife had to file FOIA request to get deceased husband's records.
TBD/DR	General	When EEOICPA was first enacted, sick workers were told they would be compensated within 9 months if they just filled out the paperwork. EE's tracking number is among the first 100 filed, and the claim has still not been compensated 8 years later.
TBD/DR	General	Many claimants are dying from their illnesses, and many survivors are frustrated by the slow bureaucratic process.
TBD/DR	General	Burial grounds are not listed in critical buildings & areas.

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ATTACHMENT 2: WORKER COMMENTS FROM PETITIONER SOURCES

Matrix Item	Worker Type	Description	Source Document
9	Operations	Tritiated water was pumped into the system right out in the atmosphere at the DW plant. They pulled samples wearing just a lab coat and gloves. There were some jobs that required a plastic suit - when they replaced pumps or cleaned up a spill, but not for routine work.	DOL 2005, Exhibit 9
9	Operations	Workers were told to drink beer to flush tritium out through the urine. Statements imply an understanding that this diluted the amount of tritium in the samples so it wouldn't show on record.	DOL 2005, Exhibit 9
9	Operations	Worker has been told that badges were not accurate. They wouldn't pick up tritium. They only picked up radiation. That would cover all the radiation you'd been exposed to but not tritium.	DOL 2005, Exhibit 9
9	Operations	DW plant (420D) separated tritium from water that had been drained from the reactor. They reconcentrated it and put it back in drums and sent it back to the reactor. They would pump it back in so they wouldn't have to contaminate new water. This had high concentrations of tritium in it.	DOL 2005, Exhibit 9
12	CW	Monitors went off constantly, but were explained away by a power surge, or workers were told the device wasn't working properly. If these devices weren't working properly, how can NIOSH or SRS know what exposure the workers received?	ABRWH 2008, Petition Presentation
12	General	Incident in 221 H. Airborne Pu from glove boxes in 410 North (where workers operated in full respiratory protection) to 410 South (where they did not). Supervisor did not want it documented because it looked bad. HP's log book was stolen while he was away.	ABRWH 2008, Petition Presentation
12	General	ER on page 29 says there is no evidence of documentation of incidents that would have resulted in very high exposures. Of course there is no evidence - SRS wanted it that way.	ABRWH 2008, Petition Presentation
12	General	Incident #7 of "Dirty Thirty" mentions that 900 people needed to clean up contamination over 3 months. Workers who were there said people were brought in from all over the plant and were "maxed out" on their annual doses in a matter of minutes, yet this incident never seems to cause much of a blip in dose reconstructions.	[Redacted] 2010
12	General	Laborers filled water can from a barrel that caught leaking water from heat exchanger in 100 Area and used water to spray drilling area to control dust. The barrel had not been roped off. Everyone was contaminated when they sprayed the water.	ABRWH 2008, Petition Presentation
12	General	ER on page 26 talks about Naval Fuels manufacturing facility operating from 1985 through 1989. Wrong. Naval Fuels never produced any fuel - the facility malfunctioned on initial start-up and the whole building was crapped up along with the workers in the building. The building was closed.	ABRWH 2008, Petition Presentation
12	Operations	Workers doubt that unusual occurrences at DW are documented. If HP came down, there would be a report on that. But that was very, very seldom.	DOL 2005, Exhibit 9

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Matrix Item	Worker Type	Description	Source Document
12	Operations	[At DW plant] they'd have a pump problem or tank overflow where they had to get in there and clean it up. They'd isolate it and it was important to get it cleaned up as quick as possible. Everybody that worked there was involved in these kinds of events at one time or another. It wasn't routine - it was supposed to be an unusual incident - but it happened more times than you wanted it to happen.	DOL 2005, Exhibit 9
12/S3	General	The absence of information from DOE about radiation incidents is a continuing theme for both construction and non-construction SRS workers applying for EEOICPA benefits. DOE has not provided DOE critiques, notes and/or minutes of safety meetings and other documents related to after-action operations conducted after incidents.	[Redacted] 2010
19	General	New in-house publication, part of "Savannah River Site Cold War Historic Property Documentation" project, is specific to 330/M Area. We have heard for years about early test reactors, but this publication gives confirmation of some of their processes.	[Redacted] 2010
19	General	"Dirty Thirty" was a memorandum published in 1985 of the most significant reactor incidents at SRS up to that point. It was part of an in-house study of reactor safety based on the experience of an 11-man selection committee and sources of information available to them.	[Redacted] 2010
19	General	ER on page 18 says R Reactor started in 1963 and shut down in 1964 when demand for Pu and H ₃ decreased. NOT TRUE. R Reactor was shut down because of a meltdown. There was also a meltdown of one of the fuel rods in K Reactor.	ABRWH 2008, Petition Presentation
19/24	General	305-M Test Pile was considered critical to SRP mission - used to test bare slugs, canned slugs, and control rods. Began construction June 1951, went critical September 1952. Un-cooled, natural uranium, graphite moderator, similar to what was used at Argonne and Hanford. "The slugs and cans were moved manually after testing back to the trays. Notably, no special shielding was used for the hot tested materials after irradiation although a potable (sic) Lucite shield was to be provided for worker protection." Clients say no one was monitored then; HPAREH summaries & NIOSH DRs almost never show dose before 1954.	[Redacted] 2010
21	CW	CWs and production workers literally worked side by side, separated only by a rope. DuPont production dressed out; CWs with no gear and no monitoring.	ABRWH 2008, Petition Presentation
23	CW	2005 CPWR study of >2,300 CWs: a significant # have no deep dose or all recorded "zero" doses in HPAREH. Dose records appear deficient for 50%–90% of CWs employed at SRS.	SEC Petition 2007, Form B
23	CW	If a site or project would read 3, they would rotate people in every few hours to keep readings/exposures low, because anything reading 2 or above would require a supervisor to go to Wilmington and explain. It's apparent that supervisors and HPs knew rules & regs, but they also knew how to adjust things to keep their records clean.	ABRWH 2008, Petition Presentation

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Matrix Item	Worker Type	Description	Source Document
23	General	717 F Building - problem with dosimeters and film badges left on racks. Set dosimeters at "0" at end of shift - had a reading of 50 or more the next morning due to night shift work and x-ray work in the building. NIOSH will say the workers got higher doses recorded than they actually experienced and this is "claimant favorable," but petitioner sees it as another indication that the monitoring program lacked integrity and cannot be trusted.	ABRWH 2008, Petition Presentation
23	General	Workers sometimes wore monitors with someone else's ID number.	ABRWH 2008, Petition Presentation
23	General	Workers at Tank Farms worked repeatedly in the area without a dosimeter badge. Several occasions when TLD badges left on board by guard gate were gone the next day. Tanker trucks spilled rad material on road, wiping out all of the TLDs. Workers sometimes did not get new badges for a day or two - worked without them.	ABRWH 2008, Petition Presentation
23	General	Most jobs were done without HP personnel or supervision, and no records were kept. Workers were used to having no badges, especially on Saturday and Sunday when they weren't available, so work continued on as usual.	ABRWH 2008, Petition Presentation
23	Operations	Security worker had access to entire site and sporadically wore a badge. Died at age 30 of lung cancer - non-smoker w/no family history of cancer.	ABRWH 2008, Petition Presentation
23	Operations	Workers in DW plant were not monitored at times. The monitoring wasn't done all the time [dosimeter/badge].	DOL 2005, Exhibit 9
23	Operations	Even in the reactor, I'd walk all over the building and wouldn't be monitored.	DOL 2005, Exhibit 9
23/12	General	Numerous statements from May 2008 minutes identify key issues for all SRS workers, especially in 1950s and early 1960s: Lack of monitoring records Workers not being monitored or having monitors that did not work Workers leaving badges outside radiation zones No records of incidents where workers were exposed	[Redacted] 2010
24	General	313-M building, Nov 1952 – Jul 1953, "90,109 reactor grade uranium slugs were canned and a number of problems, such as voids, penetration, or bare slug quality were isolated for improvement." It is hard to imagine that the 64 unmonitored operators and 12 supervisors were not impacted, but there are no radiation records available before 1954.	[Redacted] 2010
S1	CW	Workers' safety was not taken seriously. The attitude at the site was if you can do it safely, do it, but if you can't, do it anyway.	ABRWH 2008, Petition Presentation

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Matrix Item	Worker Type	Description	Source Document
S1	General	Worker in supposedly clean area was found to be contaminated; pants & shoes were taken.	ABRWH 2008, Petition Presentation
S1	Operations	[At DW plant] normally we didn't have HPs. They only came down if we called them. Very seldom.	DOL 2005, Exhibit 9
S1	Subcontractor	Subcontractor came on site in 1990 to tear down bubble towers in the 400 Areas. Workers had no protective clothing or monitoring equipment. There were no HP personnel to check the area. Workers were told to get in and get out.	ABRWH 2008, Petition Presentation
S2	CW	Petitioner personally witnessed crews of laborers shredding records - time cards, log books, monitoring reports, everything from offices of DuPont and subcontractors. The law says if records were destroyed or missing, the SEC should be applied.	ABRWH 2008, Petition Presentation
S2	Operations	Long-term worker - DOE had no external monitoring records since 1960. There were no tritium monitoring records for several years when there should have been.	DOL 2005, Exhibit 9
S3	Operations	Many workers employed by operations or production performed jobs that would be considered construction or construction support. Petitioner has provided at least 18 examples: crane operators, back-hoe operators, power and reactor operators, riggers, maintenance workers, mechanics, inventory workers, truck drivers hauling waste to and from construction sites, delivery drivers, surveyors, workers who cruised or cut timber, workers who escorted construction workers into radioactive areas, laundry workers, cleaning personnel, instrument repair workers, workers who serviced vending machines in hot areas where construction workers were working, administrative and lab personnel who worked in construction areas or who delivered mail, checks or test samples from the construction workers, and others who performed similar jobs or worked in similar areas but were listed as working in operations or production.	[Redacted] 2008b
S4	Operations	There was [redacted] that was diluting [redacted] urine samples to keep them from finding positive results.	DOL 2005, Exhibit 9
S5	General	ER states that closure of Naval Fuels facility is under way. Wrong. Building was completely torn down several years ago; nothing is left.	ABRWH 2008, Petition Presentation
WO	CW	SRS Site Profile was revised a number of times in 2004 and 2005, but concerns raised by building trades in 2003 have not been addressed.	SEC Petition 2007, Form B
WO	General	NIOSH believes the records, even though they are incomplete and unreliable, because there is nothing else to use. What about what the workers have said over the years?	ABRWH 2008, Petition Presentation
WO/S3	General	Comments made by NIOSH rep at May 08 meeting indicated worker comments were relevant to petition review & administrative review of the petition may indicate a need to evaluate all workers.	[Redacted] 2010

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Matrix Item	Worker Type	Description	Source Document
WO/S3	General	Dr. Howard's panel did not consider 29 pages of SRS worker testimony from May 2008 outreach meeting pertaining to evaluation of class definition. Minutes were not posted or available to the panel during its administrative review. Minutes contain significant testimony and information. Without consideration of this evidence, petitioner has been denied due process.	[Redacted] 2010
WO/S3	General	The review panel's conclusion that it had not received sufficient material to extend the class definition was premature and did not give petitioners fair or scientific consideration. Petitioners were denied the right to have panel consider relevant information, particularly evidence of missing DR-related records for all workers at SRS.	[Redacted] 2010
WO/S3	General	Petitioner requested administrative review of DHHS panel findings and requested copies of documentation relating to appointment of the panel, mission/objective given to panel, deliberations and conclusions of panel. Petitioner specifically questioned the process because the panel did not wait for minutes of May-08 outreach meetings to be available. Petitioner asked NIOSH to rescind Dr. Howard's decision and either extend the class definition to include all SRS workers or have another panel review the findings after having access to all relevant information.	[Redacted] 2008a
WO/S3	General	NIOSH provided almost 500 pages in response to FOIA Request, but nothing addresses panel's lack of consideration of statements given at May-2008 outreach meeting. There are no panel findings or report or recommendation in the FOIA material. NIOSH denied release of 4 pages of documentation pertaining to pre-decisional internal communications. Petitioner's representative asks ABRWH and/or Work Group to address the failure of the panel to examine relevant evidence.	[Redacted] 2010
DOL	CW	ER on page 35 says they were able to get a complete list of all construction workers for 1960. Hard to believe, considering subcontractors were in and out of that site on a daily basis. SRS didn't keep logs like that, so how did they come up with complete records?	ABRWH 2008, Petition Presentation
DOL	Subcontractor	A subcontractor did not pay taxes or social security for the workers. There are no records that the contractor was ever on site.	ABRWH 2008, Petition Presentation
TBD/DR	General	Lack of confidence in DR results. In October [2007], a DOL representative testified in a Congressional hearing that DOL had returned 2,811 DR cases in 2007 for re-work due to deficiencies identified in the work performed. After re-work, 385 claims that had been denied were approved (14% were wrong the first time around). DOL had another 9,400 cases that would be sent back for re-work, meaning that half of the cases completed would be sent back.	SEC Petition 2007, Form B
TBD/DR	General	NIOSH says they used the telephone interview. Surviving spouses or children are at a disadvantage, because they don't have adequate knowledge of exposure history, monitoring, or incident involvement. Everything was secret.	DOL 2005, Exhibit 9

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