



DIAB

DEEOIC INTERIM ADVISORY BOARD

Citizen Volunteers Providing Transparency & Accountability for EEOICPA Claimants

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REVIEW OF DEEOIC'S EVIDENTIARY STANDARD FOR CAUSATION OF ILLNESSES

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BACKGROUND

Since the Energy Employees Occupation Illness Compensation Program Act was reformed in 2004 by a bipartisan Congress, calls have been made for an independent oversight committee to review the Department of Labor Division of Energy Employees Occupational Illness Compensation (DEEOIC) implementation of the legislation. Those recommending the creation of such a board include National Academies of Sciences' Institute of Medicine (IOM), the Government Accountability Office and Econometrica. Legislation was introduced to create such a board and amendments have been accepted in the 2015 FY National Defense Authorization Act legislation.

A decision to create a shadow board was made in February of 2014. The DEEOIC Interim Advisory Board (DIAB) is comprised of volunteers from the advocate community, including former nuclear weapons workers, sick worker family members, and members from various professions who are familiar with the EEOICPA program. DIAB also has a number of experts who have volunteered to review DIAB's reports.

EXECUTIVE SUMMARY

DIAB has received a number of DEEOIC Final Decisions and toxicologist or industrial hygienist opinions. While the number of documents received to date falls short of being enough to arrive at a consensus regarding overall consistency in decisions, we identified an issue which warrants immediate attention.

DEEOIC currently requires that a claimant provide evidence of exposure pathways in addition to evidence indicating the intensity, frequency and duration of such exposure(s) (see 17 (C) <http://1.usa.gov/1vFrJbs>). This evidentiary requirement is almost impossible for the claimant or a personal physician to satisfy.

It is DIAB's opinion that not only is this standard of causation contrary to the law and Congressional intent but it also violates the Administrative Procedures Act. Moreover, this standard also conflicts with President Obama's Executive Order 13563 by creating a more burdensome process by which to qualify for the compensation program and by also not using the best science.

In addition to the adjudication documents, DIAB reviewed EEOICPA legislation, DEEOIC's policies, Presidential Executive Orders, Office of Management and Budget (OMB) 2007 Assessment, Department of Energy's (DOE) Tiger Team Assessment Reports or similar DOE industrial hygiene audits, and the Administrative Procedures Act. This report details the results of DIAB's investigation.

DIAB recommends that DEEOIC rescind the requirement for claimants to provide evidence of intensity, duration and route of exposure.

Interpretation of Legislative Language

On October 30, 2000, a bi-partisan Congress enacted the Energy Employees Occupational Illness Compensation Program Act. The purpose of this legislation was to provide relief to the DOE contractor employees who were for decades denied the basic compensation for occupational illnesses afforded to the general workforce. Originally, DOE was responsible for processing claims for diseases not covered under Part B of the Act. Those diseases are

- Cancers where NIOSH determined the probability of causation was less than 50% and those not covered under the Special Exposure Cohort
- Chronic Beryllium Disease
- Silicosis

DOE's expertise in processing workers' compensation claims was woefully inadequate. Congress also determined that the state workers' compensation systems would be an unsatisfactory venue to uniformly and fairly compensate the sick nuclear weapons workers, or their survivors, employed by DOE's contractors and subcontractors. Congress determined that under the state workers' compensation system the worker would need to prove his claim by a preponderance of the evidence. Congress realized that since DOE did not keep accurate exposure records for chemicals, solvents and heavy metals, it would be nearly impossible for a worker to prove his claim by a preponderance.

In 2004, Congress realized that these claimants could not receive justice through the states' workers compensation system and reformed EEOICPA. Responsibility for the adjudication of claims was transferred from DOE to the Department of Labor. Congress determined that one way a worker could qualify under Part E of the compensation program was to provide evidence that:

*“...it is at least as likely as not that exposure to a toxic substance at a Department of Energy facility was a **significant factor in aggravating, contributing to, or causing the illness**;...”*(Emphasis added)

The Office of Management and Budget (OMB) under President Bush assessed the EEOICPA program in 2007, <http://1.usa.gov/1v64pCF>. The OMB confirmed the purpose and need of this federal program as first stated in Executive Order 13179. OMB acknowledged the claimants under the state workers' compensation programs were "required to prove their case on exposure evidence that the government would not make available." OMB went on to say,

*"Because of long latency periods, statutes of limitations, the uniqueness of the hazards to which workers were exposed, and inadequate exposure data, many of these individuals have been unable to obtain State workers' compensation benefits. **Compensation and benefits at the Federal level are intended to minimize the financial hardships of claimants for covered work-related illnesses or death.**" (Emphasis added)*

DEEOIC is responsible for interpreting the law and implementing the program. One of those responsibilities is to provide definitions of the terms used in the legislation. In its Final Rule published two years after the enactment of the legislation, DEEOIC determined that the definition of "significant factor" means "any factor".

<http://www.gpo.gov/fdsys/pkg/FR-2006-12-29/pdf/E6-21839.pdf> page 78522 and **78523**

*"Because it is impossible to determine the extent to which any individual factor contributed to the development of cancer, OWCP has concluded that the only way to comply with the statutory mandate in Part E is, in effect, to interpret "a significant factor" as including **any factor.**"*

Page 7 of DEEOIC's District Medical Consultant's Handbook, which we understand is currently used by the Contract Medical Consultants, confirms that the standard of causation is less than what is expected in state workers' compensation programs.

http://eecap.org/PDF_Files/DOL_Information/DMC_Manual.pdf

2. Legal Standards of Certainty and Concepts There is a wide range of legal standards and concepts for judging certainty depending on the specific venue (e.g., criminal convictions, arrests, searches, police stops, a range of administrative or civil actions, etc.). These range from:

- a. Highest - beyond a reasonable doubt (e.g., used to determine guilt in criminal cases);*
- b. Clear and convincing evidence (e.g., used in special civil cases such as commitment determinations);*

c. Mid - preponderance of evidence (usual standard in civil cases and usually means more likely than not) 1;

d. Low - reasonable suspicion²; e. Lowest - mere suspicion (hunch).

In the EEOICP the causation standard for Part E seems to fall between level c and d (above).

Implementing the Interpretation of the Legislative Language

Chapter 2-0700 of DEEOIC's Unified Procedure Manual, <http://1.usa.gov/1t3L3M6>, provides guidance to the claims examiners (CE) in establishing exposure to toxic substances. This chapter was last updated in January 2010.

Paragraph 2 of this Chapter lays out the rules for establishing exposure:

*"...the evidence of file **must show evidence of potential or plausible exposure (emphasis added)** to a toxic substance and evidence of covered DOE contractor/subcontractor or uranium employment at a covered DOE/RECA facility during a covered time period."*

The Procedure Manual goes on to say,

*"Exposure to a toxic substance can be established by the submission of probative documentation that shows such substance was present at the facility where the employee worked, that there was a **reasonable likelihood (emphasis added)** for employee exposure, and that the employee came into contact with such substance."*

The Procedure Manual provides further guidance to the CE by explaining how the Site Exposure Matrix (SEM) can assist in establishing exposure by determining whether the toxic substance that is claimed to have caused, contributed to or aggravated a disease or condition was present not only at the facility but in specific buildings, and which processes and job categories would most likely have been associated with exposure. (Please note that the National Academy of Sciences' Institute of Medicine (IOM) and DIAB previously reviewed a portion of SEM and found that it is not always accurate).

In this chapter of the Procedure Manual, the CE is directed to "exhaust all reasonable exposure development" before asking for a referral to an industrial hygienist (IH). Additionally, if a claim is sent to an IH, according to this chapter

"1) The IH mainly addresses issues about routes of exposure (e.g., whether or not a welder at a given facility could have been exposed to nickel). An IH also may verify whether or not a toxic substance was/could have been present during a

certain work process (e.g., welding, or instrument maintenance) at a given site, or if a certain labor category (e.g., welder, or instrument mechanic) could have come into contact with a given toxic substance in the performance of his or her duty at the site.

The IH may also be asked to determine the plausibility that a certain toxic substance was present or that a claimed exposure could have occurred based upon the work history and/or accident/incident report.”

DIAB finds this approach reasonable, that it complies with Congressional intent, and adequately interpretative of the legislative language. However, DEEOIC added yet another hurdle that is almost impossible, for claimants to overcome as they attempt to prove their claims.

Chapter 2-1000, Paragraph 17 (c), <http://1.usa.gov/1vFrJbs>, states that in order for a disease, not covered under Part B (Chronic Obstructive Pulmonary Disease (COPD) or Parkinson’s Disease for example), to qualify under Part E a claimant must provide evidence of the intensity of the exposure.

*c. Causation. For Part E claims, the evidence must establish that there is a relationship between exposure to a toxin and an employee’s illness or death. This relationship **defines the intensity, duration, and route of exposure, (emphasis added)** which is characteristic of that specific toxin and illness or death. The evidence further needs to demonstrate whether it is “at least as likely as not” that such exposure at a covered DOE or RECA section 5 facility during a covered time period was a significant factor in aggravating, contributing to, or causing the employee’s illness or death, and that it is “at least as likely as not” that exposure to a toxic substance(s) was related to employment at a covered DOE or RECA section 5 facility.*

If insufficient or no monitoring of toxic exposures was performed at the DOE nuclear weapons facilities then it is next to impossible for a claimant or the personal physician to supply probative evidence of the intensity and duration of exposure the worker experienced to the toxic substance(s) in question.

Review of Department of Energy Tiger Team Reports or Similar Audits

In response to allegations of environmental crimes at the Rocky Flats plant in Golden, Colorado, DOE’s then-Secretary Watkins formed Tiger Teams to evaluate various conditions at DOE’s nuclear facilities. Thirty-five plants were assessed. The Tiger Teams reviewed areas concerning environmental, health and safety and management issues. Over the years, DOE followed up on the concerns raised by the Tiger Teams.

DIAB reviewed fourteen of the Tiger Team reports and other similar audits and confirmed that the facilities did not monitor for exposures other than radiation and beryllium, or if the facilities did monitor for other toxic substances, the industrial hygiene program was inadequate.

The Appendix to this report provides more examples of the Tiger Teams', or other DOE assessments, findings. Below is a sampling of those findings:

Mound Plant, *"There is no schedule for regular industrial hygiene monitoring of employee exposures."*

Pantex, *"...clearly confirm that chemical exposures to Plant personnel have exceeded DOE prescribed (OSHA) limits during routine work assignments."*

Santa Susana Field Laboratory, *"A program is not in place to identify, evaluate, (PP.4-2) monitor, and control credible exposures to chemical, (H2/C1) physical, and safety hazards..."*

Additionally, industrial hygiene programs have not improved much in recent years. An eyewitness provided DIAB with this firsthand account of a visit to Los Alamos National Laboratory (LANL):

"On March 6, 2006 then Congressman Tom Udall (D-NM), accompanied by staff members and an advocate, was given a tour of various facilities at LANL where records pertinent to EEOICP claims are stored. At Technical Area 35, a member of ESH-12 directly addressed the Congressman with a single cardboard documents carton of standard size (15 x 12 x 10 in.) on the table in front of her. 'The lab as very little historical industrial hygiene data,' she said. 'It's all right here in this box.' Upon her removing the lid, it was revealed that the box was more than half empty, with no more than ten hanging file folders."

And as recently as 2013, DOE's report on the implementation of exposure assessment plans for LANL explains, <http://1.usa.gov/Q6QMAF>

"...LANS has completed only about 30 percent of the baseline exposure assessments and 10 percent of the confirmatory sampling for Environmental Management and Waste Operations at Area G...At the Los Alamos Neutron Science Center (LANSCE), only one of the four work activities that were examined had a documented exposure assessment in accordance with lab procedures. At TA-55, a variety of worker exposure data is available (e.g., sound level surveys and air sampling data), but limited information has been entered into the CTS [Chemical Tracking System] in part due to computer security issues."

Presidential Executive Orders and Review of Administrative Procedures Act

As noted earlier in this report, both the Clinton and Bush Administrations acknowledged that DOE workers usually were unable to receive compensation for their occupational illnesses through the various state workers' compensation systems. The Administrations intended to ease the process so that the workers or their families would receive the monetary and medical benefits due them.

And while President Obama did not directly comment on EEOICPA, he did issue Executive Order 13563 on January 21, 2011. This order directs all federal agencies to ensure that their regulations are

*“...based on the best available science. It must allow for public participation and an open exchange of ideas. It must promote predictability and reduce uncertainty. It must identify and use the best, most innovative, and **least burdensome tools for achieving regulatory ends**”*

And that “each agency shall ensure the objectivity of any scientific and technological information and processes used to support the agency’s regulatory actions.”

Additionally, the Administrative Procedure Act (APA) requires that agencies refrain from establishing regulations or policies such that an individual could “be adversely affected by a matter required to be published in the federal register and not so published.”

It is DIAB’s opinion that DEEOIC has failed to comply with Executive Orders 13179 and 13563 as well as the APA in a number of ways. DIAB will issue a separate report on DEEOIC’s compliance with the APA. However, placing the responsibility on the claimants to provide evidence of the intensity and duration of exposure to one or more toxic substances, where oftentimes evidence does not exist, is a burden that Congress and the Executive Office did not intend for the claimants to face.

In fact, it is possible that one reason Congress decided to reform the legislation in 2004 by taking the responsibility of claim adjudication away from DOE and making DOL’s responsibility is this testimony by Professor John Burton, former member of Workers Advocacy Advisory Committee which advised DOE Office of Worker Advocacy to the U.S. Senate Committee on Energy and Natural Resource, page 57 <http://1.usa.gov/1pUCbHR>,

“Mr. Chairman, we understand that DOE has received recommendations from the Hays Company, a consultant it brought in to tell its contractor how to do better. The recommendations call for shifting the burden back to the employee when there is little or no known medical causation. Using this new standard, DOE could clear out its backlog of claims in a matter of months. This recommendation prejudices cases even before they arrive at the physicians panel.”

Unfortunately, it is obvious that DEEOIC has implemented the Hays Company's recommendation and shifted the burden of proving a claim back to the sick workers or their grieving survivors. As evidenced by the legislation and the Executive Orders, this position is the antithesis of the remedy Congress envisioned.

Recommendation

It is counterintuitive for Congress to enact a law to ease evidentiary requirements because the records do not exist only to have the implementing agency require claimants to provide the non-existent records to prove their claims.

There is ample evidence showing that the records DEEOIC expects the claimants to provide do not exist. DIAB urges DEEOIC to rescind this requirement, especially the requirement that claimants provide evidence of the intensity of the exposure. It is impossible for a claimant, claims examiner, toxicologist or medical consultant to affirmatively state how much a worker was exposed to any toxic substance where no monitoring records are available. Since the duration of the exposure would most likely have been the number of hours a worker was present in a particular building where the toxic substance was present, that evidence is in his employment records.

APPENDIX

Tiger Team Reports

Argonne

<http://www.osti.gov/scitech/servlets/purl/6302551>

Page 430 - “Monitoring data were maintained by ESHD in written reports or raw data sheets in building files. Exposure records by worker or by job function were not compiled by either ESHD or by the Medical Department as required by DOE 5480.10.”

Page 452 – “Respiratory Protection - Use of improper protection factors, lack of field inspection, improper use of dust masks for asbestos exposures.”

“The Industrial Hygiene Section of ESHD did not update the Health and Safety Manual new and revised OSHA regulations. 29 CFR 1910.1450, Occupational Exposures to Hazardous Chemicals in the Laboratory, was not in place to assure compliance by the January 31, 1990, deadline. Deficiencies in the industrial hygiene program could be traced to similar oversight, surveillance, enforcement, and verification concerns addressed in the Personnel Protection Section (4.5.15.2) of this appraisal report.”

Idaho

<http://www.osti.gov/scitech/servlets/purl/10189944>

Page 75 – “Within the EG&G Idaho industrial hygiene program, deficiencies existed in the areas of development of policies and procedures for independent appraisals and audits, development of formal industrial hygiene program plans, exposure monitoring program for laboratory employees, reviews of work permits, and implementation of a laser safety program.

- Within the MK-FIC industrial hygiene program, deficiencies existed in the areas of reduction on reliance of other site contractors for industrial hygiene support; development of an industrial hygiene program and policy; and resolution of deficiencies in respiratory protection, breathing air quality, and hazard communication.
- Within the B&W industrial hygiene program, deficiencies existed in the areas of reducing industrial hygiene staff turnover and repetitive motion injuries, and resolution of deficiencies in the hazard work permit, laser safety, respiratory protection, hazard communication, and health monitoring programs.
- Within the ID industrial hygiene program, deficiencies existed in the areas of a general lack of scope, depth and formality of the industrial hygiene program, authorities, responsibilities, staffing and training, planning, resource management, oversight and

surveillances, corrective action tracking systems, internal self-assessments, and audits and program documentation.

•Within the EG&G Idaho industrial hygiene program, deficiencies existed in the areas of development of policies and procedures for independent appraisals and audits, development of formal industrial hygiene program plans, exposure monitoring program for laboratory employees, reviews of work permits, and implementation of a laser safety program.”

Los Alamos National Laboratory

http://eecap.org/PDF_Files/New_Mexico/Los_Alamos/Tiger_Team_2.pdf

Page 193 - “TA-55 has not had frequent industrial hygiene representation. Therefore, a number of required industrial hygiene programs are deficient such as respiratory protection, carcinogen monitoring, and hazard communications. (See Sections 4.5.1.15.2, PP.6, and 4.5.4.14.2, PP.6.)”

Page 200 – “The Health Physics Operations Group has a safe operating procedure for self-contained breathing apparatus (SCBA) operations at TA-55. The Industrial Hygiene Group now is requiring that this procedure must be a Nuclear Materials Technology Division procedure. Therefore, the Nuclear Materials Technology Division does not have a procedure in place which is applicable to the Nuclear Materials Technology Division organization and operations. Furthermore, a number of TA-55 emergency response team personnel are currently unqualified to use SCBA equipment to perform their task. The Industrial Hygiene Group does not have a Respiratory Protection Program in place. (See Concern TSA-1, WS.3-1.)”

Page 581 – Los Alamos National Laboratory does not have a program implementing the requirements of the American Conference of Governmental Industrial Hygienists as set forth in "Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices," dated 1990-1991, with respect to static magnetic fields in accelerator facilities.”

Mound – “There is no schedule for regular industrial hygiene monitoring of employee exposures.” Tiger Team Assessment of the Mound Plant Miamisburg, Ohio Dec. 1989, Appendix D: OSHA Assessment Report and ASHA1B Summaries, 1.4.2.1 Baseline Worksite Surveys, page D-12

Nevada Test Site

<http://www.osti.gov/scitech/servlets/purl/137960>

Page 90 – “Management of health hazards has received additional emphasis in recent years, and the REECo industrial hygiene organization has expanded. The result is an industrial hygiene organization that does not have the experience and stature to proactively manage health protection. For example, exposures are not appropriately documented for REECo and especially

for non-REECo employees, and personnel protective equipment is often the primary means of protecting workers when, in fact, engineering controls are both feasible and required by the applicable DOE and/or OSHA standards.”

“Current industrial hygiene monitoring efforts are providing improved documentation of exposure conditions. While the program thrust has been correctly directed at short-term exposures, more documentation of time-weighted average exposures (by days/months/years) is desirable. Most OSHA standards for air contaminants are based upon eight-hour time-weighted average exposures. There was inconsistency in exposure recordkeeping, dependent on the organizations involved. Typically records may exist for one group of employees within an area, but they may not exist for employees of other organizations who work in close proximity. Mechanisms for providing estimates, based on actual sampling 111-85 or appropriate professionally-based projections, were nonexistent. Recent staff increases may alleviate these problems.”

Pantex

<http://www.osti.gov/scitech/servlets/purl/7271831>

Page 669 – “There does appear to be an inadequacy of program resources in the Industrial Hygiene Department at Pantex. The lack of sufficiently trained personnel has limited the department's ability to ensure a comprehensive review of all of the operations in the plant. “

Page 671 - “The industrial hygiene staff does not routinely provide hazard characterization of modified processes or formulation changes. For example, the determination as to whether a safety or health review of a process change in the weapons area is needed is left to the judgment of a weapons safety engineer. This lack of review has contributed to at least one known case of an employee becoming sensitized to a chemical. Pantex is in the process of modifying this policy to include a safety and health review for all new processes, modified processes and formulation changes. The baseline work survey system was also deficient in that airborne monitoring was not conducted as required by OSHA standards. Examples include the lack of initial monitoring for lead for spray painters who use leaded paints and the lack of initial monitoring for vinyl chloride at the plastics shop for the employees who weld PVC. OSHA's lead and vinyl chloride standards require that initial monitoring be conducted in these circumstances.”

Pinellas

<http://www.osti.gov/scitech/servlets/purl/7138523>

Page 222 – “However, GEND monitoring records, although limited, clearly confirm that chemical exposures to Plant personnel have exceeded DOE prescribed (OSHA) limits during routine work assignments. Physical stresses, such as may be induced by repetitive motion tasks, have resulted in lost time injuries. Trauma related injuries and excessive chemical exposures clearly indicate deficiencies in the Industrial Hygiene Program.”

Page 224 – “GEND has not developed and/or fully implemented several Site and facility organization and administration Industrial Hygiene programs required by DOE Orders or industry practices. Examples of program deficiencies include, but are not limited to, insufficient chemical exposure surveillance; incomplete implementation of the hazard communication program; no formally developed carcinogen control program; and noted deficiencies in surveillance of the effectiveness of engineering controls (ventilation systems).”

Sandia

http://eecap.org/PDF_Files/New_Mexico/Sandia/Sandia_Tiger_Team.pdf

Page 455 – “Sandia National Laboratories, Albuquerque, procedures and (IH.2-1) documentation do not provide clear guidance to ensure that (H2/C1) potential industrial hygiene hazards are recognized and corrected and that industrial hygiene requirements are uniformly implemented, as required by DOE5480.10, and DOE 5483.1A.”

Page 456 – “There is no written program to document or implement a comprehensive chemical, physical, biological, or ergonomic evaluation of each SNL, Albuquerque, facility, process, or environment. SNL, Albuquerque, relied upon the Preliminary Hazard Assessment (PHA) of each facility to include industrial hygiene concerns. The PHA was drafted by line management, with little to no input from Industrial Hygiene.”

“Deficiencies noted and recommendations made by Industrial Hygiene based on monitoring and evaluations of the workplace are not tracked to completion. Once the evaluation is given to line management, Industrial Hygiene files the report, effectively closing it.”

Santa Susana Field Lab

http://www.etc.energy.gov/Library/Main/DOE-EH-0175_ES&H_Tiger_Team_Assessment_of_ETEC.pdf

Page 293 - “CONCERN: A program is not in place to identify, evaluate, (PP.4-2) monitor, and control credible exposures to chemical, (H2/C1) physical, and safety hazards, in violation of various DOE Orders, such as DOE 5480.10 and OSHA regulations, such as 29 CFR 1926.58.”

Page 295 - “Employees reported benzene to be a component of the 20,000 gallons of denatured alcohol stored outside Bldg. T463. One of these employees wrote an operating procedure for using the material that specified personal protective equipment and chemical-handling procedures. However, the employees were not aware of the hazards associated with benzene and the associated regulatory requirements. Written procedures did not consider the benzene hazard. (See Concerns OA.7-3 and PP.4-2.)”

Page 298 - “A Chemical Hygiene Plan has not been developed and implemented.”

Page 299 - “A chemical hygiene plan has not been developed or implemented for laboratories at the ETEC facility.”

Page 300 – “Employee exposure to chemical hazards has not been fully evaluated. For example, chemicals such as arsenic trioxide, benzene, lead, and asbestos, which require mandatory workplace monitoring of employee exposure have not been addressed.”

Other DOE Documents

Paducah

2014 Page 22 <http://energy.gov/sites/prod/files/2014/03/f10/SwiftandStaleyPaducahDOE-VPPAssessmentFinalReport.pdf>

*“Although SST uses the industrial hygienists to identify hazards related to potential exposures, it has **not yet compiled a comprehensive Baseline Exposure Assessment, or used that assessment to develop a systematic and comprehensive Industrial Hygiene Plan** in accordance with the expectations in DOE-VPP. As discussed earlier, workers and managers believed the IH resources were adequate, but without this plan, SST cannot adequately determine if appropriate IH expertise and resources are available or if they identified all commonly encountered hazards.”*

Los Alamos - As recently as 2013, DOE’s report on the implementation of exposure assessment plans for Los Alamos explains, <http://1.usa.gov/Q6QMAF>

“...LANS has completed only about 30 percent of the baseline exposure assessments and 10 percent of the confirmatory sampling for Environmental Management and Waste Operations at Area G...At the Los Alamos Neutron Science Center (LANSCE), only one of the four work activities that were examined had a documented exposure assessment in accordance with lab procedures. At TA-55, a variety of worker exposure data is available (e.g., sound level surveys and air sampling data), but limited information has been entered into the CTS in part due to computer security issues.”

PubMed report published in 2007, <http://www.ncbi.nlm.nih.gov/pubmed/17175512>

A chemical exposure assessment was conducted for a cohort mortality study of 6157 chemical laboratory workers employed between 1943 and 1998 at four Department of Energy sites in Oak Ridge, Tennessee, and Aiken, South Carolina. Previous studies of chemical laboratory workers have included members within professional societies where exposure assessment was either limited or not feasible, or chemical processing

*employees where laboratory and production workers were combined. **Because sufficient industrial hygiene records were unavailable for all four sites, weighted duration of employment was used as a surrogate for the magnitude of exposure.***

Rocky Flats 1999 Radiological Assessment Corporation report on the Rocky Flats plant:
http://www.riskassessmentcorporation.com/docs/Rocky_Flats_Technical_Summary.pdf

*It is important to understand that, as is often the case, monitoring data for carbon tetrachloride and other chemicals are not as available as are data for radionuclides. **Because of this, estimating risks from exposure to chemicals is often more difficult and uncertain.***

The following individuals are members of DIAB or members of the expert advisory team. They have all supported nuclear worker justice. However, listing here does not indicate review of, or agreement with, every statement made by DIAB.

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