August 26, 2008

09-09-08P03:14 RCVD

SEC Petition
Office of Compensation Analysis and Support
NIOSH
4676 Columbia Parkway MS-C-47
Cincinnati OH 45226

Dear Members of the Commission;

This petition is based upon the following issues that relate to Special Exposure Cohort (SEC), of Baker Perkins Company of Saginaw Michigan an atomic weapons employer beginning May 1956.

This SEC petition for the residual radiation time periods is based upon the following issues; the incomplete analysis and review of *all available* source information available to NIOSH. And the deficient and unreliable and incomplete dosimetry data available to NIOSH for residual radiation workers and lack of proper training.

These residual radiation workers performed work without protective equipment and supervision and without dosimetry monitoring of the employees to measure internal exposure to uranium dust exposure from inhalation and ingestion or uranium that were circulated throughout the building and daily exposure to dust that had settled on rafters and equipment and equipment. **See Attachments: A, B, D, E, and F.**

Decontamination operations such as chipping, vacuum cleaning, scooping uranium should be preformed with extreme care. Approved respirators should be worm by operators and all those that were present in plant during operations to prevent the operator's exposure and to those in the area of excessive radioactive airborne dust concentrations. Employees should be monitored and made aware of immediate danger to radiation exposures. Furthermore Attachment A clearly states that there are cumbersome monitoring and clearly show there were incidents that took place during the process and decontamination operations.

The internal dose exposure estimates that rely on air concentration dose data for the residual radiation time period has been criticized by experts as unreliable. **See Attachment: G.**

According to the analytical data from Baker Perkins the Ko-Kneader as used as part of the process to mix the uranium , **Attachment C.** This machine is a very large piece of equipment that has spread large amounts of uranium dust throughout the plant. The inhalation and or/ingestion of

even small amounts of these radionuclides have significantly increased the probability if the development of a radiogenic cancer.

According to the NIOSH website only on paid claim has been listed this claim used different dose exposure model. **See Attachment G and F**. Attachment G shows that there has not been any paid claim which is false Attachment F clearly shows that to a deficiency on the part of NIOSH for the update of records.

I ask the Commission for Baker Perkins Company, Saginaw Michigan to be placed as a SEC facility.

Respectfully Submitted

SEC Petitioner Class

DESCRIPTION OF ATTACHMENTS

A. Analytical Data Sheet Baker Perkins

B. The Saginaw News article dated September 2, 2000

C. Diagram of Ko-Kneader machine

D. Deposition

E. Dose Reconstruction Finding

F. Dose Reconstruction Finding of the only paid claim from Baker Perkins

G. Office of Compensation Analysis Support NIOSH claim information

H. Summary of NIOSH re-examination of Lymphoma Target Organ Selection

ATTACHMENT A

~~BECKMAN~~ MI.13 OUTPUT INCINERATOR

ANALYTICAL DATA SHEET

ANALYTICAL DEPT. – HEALTH AND SAFETY DIVISION

No 8536

NLO

1956 Industrial Hygiene or Medical Dept.

I. H.# 822 Sample Nos. 3 Date Collected 5/17 by CES Route to CES

Location BAKER-PERKINS CO. Type of Sample water Analyzed for F Alpha

Remarks SAGINAW, MICHIGAN U xxx Beta

Samples of water discharged to river during steam clean- NO_3 Ra

ing of equipment. Oil pH

Be Th

Analytical Chemistry Section:

Date Received 5-21-56 by Lab.

Date Reported 6-23-56 by Lab.

Method of Analysis Fluorimeter

by Lab.

Counting Data:

BKGD GEO

Sample No.	Hour	Sample Description	R	T	Q	Vol.	ppm U
		Please analyze for gm/U/gal.					
BP-1		P - KO-Kneader				130 ml.	.078
BP-2		K - KO-Kneader				130 ml.	.831
BP-3		Omega Feeder				130 ml.	54.66

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NLO - H&S - 738 (2.2.56)

(1)

ANALYTICAL DATA SHEET

ANALYTICAL DEPT. – HEALTH AND SAFETY DIVISION

No 8537

Industrial Hygiene or Medical Dept.		Analytical Chemistry Section:	
1956			
I. H.# 813	Sample Nos. 6	Date Collected 5/14 by CES	Route to CES
Location BAKER-PERKINS CO.	Type of Sample air dust	Analyzed for F	Alpha
Remarks SAGINAW, MICHIGAN		U	Beta
Mixing tests conducted in Bldg. 15 (Laboratory Bldg.)		NO_3	Ra
		Oil	pH
		Be	Th
Date Received 5-21-56 by Lab			
Date Reported 5-22-56 by MW			
Method of Analysis Alpha scintillation opunter 2 by CJM			
Counting Data:			
BKGD .27 c/min	GEO 40%		

Sample No.	Hour	Sample Description	R	T	Q	Count	Time	C/min	d/m/M³
6900	1237	GA Background sample collected in Ko-	.02	10	.2	7	15.30	0.19	3
		Kneader area prior to opening or							
		processing of any material.							
6901	1328	GA Same as 6900	.02	10	.2	14	15	0.66	12
6902	1500	BZ Scooping orange oxide into Omega feed	.02	3.5	.07	32	0.29	110.07	5616
		hopper. Dust-foe respirator worn.							
6903		BZ Same as 6902	.02	3.5	.07	32	0.97	32.72	1669
6904		BZ Same as 6902	.02	3.5	.07	650	2.32	275.59	14,061
6905		GA Ko-Kneader area during filling of	.02	10	.2	32	0.21	151.97	2714
		feed hopper.							
		The operator was very careful in scooping material from the							
		drum to the hopper. However, no matter how careful, the							
		scooping produces a very fine, barely visible dust which							
		disperses in the air around the machine.							

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NLO • H&S • 736 (2.2.56)

(2)

ANALYTICAL DATA SHEET

ANALYTICAL DEPT. – HEALTH AND SAFETY DIVISION

No 8538

Industrial Hygiene or Medical Dept.

1956

I. H.# 814 Sample Nos. 1 Date Collected 5/14 by CBS Route to CBS

Location BAKER-PERKINS CO. Type of Sample air dust Analyzed for F Alpha xx

Remarks SAGINAW, MICHIGAN U Beta

NO_3 Ra

Oil pH

Be Th

Analytical Chemistry Section:

Date Received 5-21-56 by Lab

Date Reported 5-22-56 by MW

Method of Analysis Alpha scintillation counter 2 by CJM

Counting Data:

BKGD .19 c/min GEO 11%

Sample No.	Hour	Sample Description	R	T	Q	Count	Time	C/min	d/m/M³
6906	1532	GA Ko-Kneader area during calibration of Omega feeder. Material fed through feeder and dropped into cardboard container from sample chute. Only visible dusting was when box was removed and emptied.	.02	12	.24	32	1.66	20/32	276

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NLO-H&S-736 (2.2.56)

(3)

ANALYTICAL DATA SHEET

ANALYTICAL DEPT. – HEALTH AND SAFETY DIVISION

Nº 8539

1956 — Industrial Hygiene or Medical Dept.

I. H.# 815 Sample Nos. 4 Date Collected 5/15 by CES Route to CES

Location BAKER-PERKINS CO. Type of Sample air dust Analyzed for F Alphaxx

Remarks SAGINAW, MICHIGAN U Beta

NO_3 Ra

Oil pH

Be Th

Analytical Chemistry Section:

Date Received 5-22-56 by Lab

Date Reported 5-22-56 by MT

Method of Analysis Alpha scintillation counter 2 by C.M

Counting Data:

BKGD .19 c/min GEO 44%

Sample No.	Hour	Sample Description	R	T	Q	Count	Time	C/min	d/m/M³
6907	0839	GA East side of Ko-Kneader during first trial run.	.02	15	.3	32	5/85	54.61	690
6908	0839	GA West side of Ko-Kneader during same period as above. Water line plugged up after a few minutes of operating time and water supply cut off. Dry material dropped into product drum at discharge end causing considerable dust.	.02	15	.3	32	10.47	2.87	31
6909	0903	GA Same location as 6907; during 2nd test run.	.02	10	.2	32	4.82	6.45	106
6910	0903	GA Same as 6908; during 2nd test run. Some dusting as wet material falls into drum on top of dry material. Vacuum hose from Spencer inserted into drum to reduce amount of escaping dust. Water line plugged again toward end of sampling period (simultaneous with test period) and more dry material dropped from barrel resulting in more dust.	.02	10	.2	32	8.88	3.41	56

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ANALYTICAL DATA SHEET

ANALYTICAL DEPT. – HEALTH AND SAFETY DIVISION

No 8540

1956 — Industrial Hygiene or Medical Dept.

I. H.# 816 Sample Nos. 4 Date Collected 5/15 by CES Route to CES

Location BAKER-PERKINS CO. Type of Sample air dust Analyzed for F Alphaxx

Remarks SAGINAW, MICHIGAN U Beta

NO_3 Ra

Oil pH

Be Th

Analytical Chemistry Section:

Date Received 5-22-56 by Lab

Date Reported 5-22-56 by MH

Method of Analysis Alpha scintillation counter 2 " " by CJM

Counting Data:

BKGD .19 c/min GEO 44%

Sample No.	Hour	Sample Description	R	T	Q	Count	Time	C/min	d/m/M³
6911	0919	GA Ko-Kneader area during hand scooping of material into feed hopper. Machine operating during this period.	.02	10	.2	32	1.81	17.49	284
6912		BZ Hand scooping material into feed hopper from drum. Dust-foe respirator worn.	.02	5	.1	32	0.22	145.26	4716
6913		BZ Continuation of 6912, except when drum was almost empty polyethylene liner was pulled out and remainder dumped from liner into feed hopper.	.02	2.5	.05	640	2.97	216.30	13,981
6914		Control Sample				3	15	0.01	

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NLO-H&S-736 (2-2-56)

(5)

ANALYTICAL DATA SHEET

ANALYTICAL DEPT. – HEALTH AND SAFETY DIVISION

Nº 8541

1956 — Industrial Hygiene or Medical Dept.

I. H.# 817 Sample Nos. 4 Date Collected 5/15 by CES Route to CES

Location BAKER-PERKINS CO. Type of Sample air dust Analyzed for F Alphaxxx

Remarks SAGINAW, MICHIGAN U Beta

NO_3 Ra

Oil pH

Be Th

Analytical Chemistry Section:

Date Received 5-22-56 by Lab

Date Reported 5-22-56 by MW

Method of Analysis Alpha scintillation counter 2 by C.D.M.

Counting Data:

BKGD .19 c/min GEO 44%

Sample No.	Hour	Sample Description	R	T	Q	Count	Time	C/min	d/m/M³
6915	1119	GA West side of Ko-Kneader discharge as slightly watered material is run through barrel to push out hydrate which had adhered to sides of barrel.	.02	15	.3	32	8.35	3.84	39
6916	1119	GA SE corner of Ko-Kneader; simultaneous with 6915.	.02	15	.3	13	15	0.68	7
		At this point it was decided that the mixing could not be done on the Type "P" Ko-Kneader; that the Type "K" would be better. Decontamination of the "P" Ko-Kneader started at 1:04 p.m.							
6917		GA Ko-Kneader area during initial decontamination phase; chipping dried oxide cake from the wings and teeth and using flat vacuum tool attachment to vacuum loose material from barrel.	.02	12	.24	52	7.27	4.21	57
6918		GA Same as 6917	.02	12	.24	32	8.45	3.60	49

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ANALYTICAL DEPT. – HEALTH AND SAFETY DIVISION

No 8542

1956 — Industrial Hygiene or Medical Dept.

I. H.# 818 Sample Nos. 6 Date Collected 5/15 by CES Route to CES

Location BAKER-PERKINS CO. Type of Sample air dust Analyzed for F — Alphaoc

Remarks SAGINAW, MICHIGAN — U — Beta

NO_3 — Ra

Oil — pH

Be — Th

Analytical Chemistry Section:

Date Received 5-22-56 by Lab

Date Reported 5-22-56 by MY

Method of Analysis Automatic alpha proportio counter 1 by CJM

Counting Data:

BKGD .13 c/min GEO 16%

Sample No.	Hour	Sample Description	R	T	Q	Count	Time	C/min	d/m/M³
6919		BZ Removing barrel from machine and placing on paper on floor for cleaning.	.02	2	.04	17	14.44	1.05	82
6920		BZ Chipping and vacuuming loose material from wings and teeth. No respirator worn.	.02	2.5	.05	20	11.59	1.60	99
6921	1331	GA During decontamination of barrel and screw.	.02	20	.4	20	12.08	1.65	12
6922		GA Same as 6921	.02	20	.4	20	8.16	2.32	18
6923		BZ Cleaning barrel with pneumatic powered circular brush. Dust-foe respirator and goggles worn.	.02	3	.06	20	2.73	7.20	373
6924		BZ Cleaning screw with pneumatic brush. Dust-foe respirator and goggles worn.	.02	5	.1	20	1.11	17.89	556

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ANALYTICAL DATA SHEET

ANALYTICAL DEPT. – HEALTH AND SAFETY DIVISION

Nº 8544

1956 — Industrial Hygiene or Medical Dept.

I. H.# 819 Sample Nos. 7 Date Collected 5/16 by CES Route to CES

Location BAKER-PERKINS CO. Type of Sample air dust Analyzed for F Alphaxx

Remarks SAGINAW, MICHIGAN U Beta

Type "K" Ko-Kneader No_3 Ra

Oil pH

Be Th

Analytical Chemistry Section:

Date Received 5-22-56 by Lab

Date Reported 5-22-56 by MW

Method of Analysis: Automatic alpha proportio counter 1 by CJM

Counting Data:

BKGD .13 c/min GEO 16%

Sample No.	Hour	Sample Description	R	T	Q	Count	Time	C/min	d/m/M³
6925		GA During steam cleaning of Ko-Kneader barrel. Dust-foe respirator worn.	.02	10	.3	20	6.78	2.82	44
6926	1115	P Sample of exhaust from Spencer vacuum which was exhausted into room.	.02	2	.04	13	19.69	0.63	41
6927	1119	P Over feed hopper, only opening in system.	.02	1	.02	8	16.79	0.36	64
6928	1207	GA During running of moist material.	.02	15	.3	20	9.80	1.91	20
6929		GA Same as 6928	.02	15	.3	20	10.79	1.72	18
6930		GA Same as 6928	.02	20	.4	20	20.88	0.83	6
6931		GA Same as 6928	.02	20	.4	20	2.39	8.24	64
		Some dumping done during sample #6931.							

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ANALYTICAL DATA SHEET

ANALYTICAL DEPT. — HEALTH AND SAFETY DIVISION

Nº 8545

1956 — Industrial Hygiene or Medical Dept.

I. H.# 820 Sample Nos. 6 Date Collected 5/17 by CBS Route to CBS

Location BAKER-PERKINS CO. Type of Sample air dust Analyzed for F Alphaxx

Remarks SAGINAW, MICHIGAN U Beta

(Decontamination) "K" Ko-Kneader No_3 Ra

Oil pH

Be Th

Analytical Chemistry Section:

Date Received 5-22-56 by Lab

Date Reported 5-22-56 by MT

Method of Analysis Alpha scintillation counter 2 by CJM

Counting Data:

BKGD .18 c/min GEO 44%

Sample No.	Hour	Sample Description	R	T	Q	Count	Time	C/min	d/m/M³
6932	0903	GA Ko-Kneader area during start of decon-	.02	15	.3	32	0.88	36.17	391
		tamination; vacuuming, chiseling							
		caked UO_3 from screw and barrel.							
		Feed hopper removed during this sample.							
6933		BZ Using hammer and chisel to chip caked	.02	3	.06	32	1.25	25.41	1375
		UO_3 from screw. Dust-foe respirator							
		and goggles worn.							
6934		BZ Using hammer and chisel to chip caked	.02	2	.04	32	2.16	14.62	1187
		UO_3 from barrel.							
6935		GA Same as 6932	.02	15	.3	32	1.41	22.51	244
6936		BZ Vacuuming UO_3 from screw and barrel.	.02	2.5	.05	32	4.38	7.12	462
6937		BZ:Emptying feed hopper into poly-	.02	4	.08	32	1.49	21.29	864
		ethylene bag inside drum. Bag taped							
		sealed to discharge hopper.							

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ANALYTICAL DATA SHEET

ANALYTICAL DEPT. – HEALTH AND SAFETY DIVISION

Nº 8547

1956 — Industrial Hygiene or Medical Dept.

I. H.# 821 Sample Nos. 6 Date Collected 5/18 by CES Route to CES

Location BAKER-PERKINS CO. Type of Sample air dust Analyzed for F Alphaxx

Remarks SAGINAW, MICHIGAN U Beta

Decontamination NO_3 Ra

Oil pH

Be Th

Analytical Chemistry Section:

Date Received 5-22-56 by lab

Date Reported 5-22-56 by MT

Method of Analysis Alpha scintillation counter 2 by CJM

Counting Data:

BKGD .19 c/min GEO 44%

Sample No.	Hour	Sample Description	R	T	Q	Count	Time	C/min	$d/m/M^3$
6938		BZ Using pneumatic powered circular brush to clean screw. Dust-foe respirator and goggles worn.	.02	3	.06	32	1.14	27.88	1509
6939	0944	GA During power brush cleaning.	.02	15	.3	32	0.21	152.19	1647
6940		GA Same as 6939 This was probably the dustiest of the decontamination jobs. Doors and windows were opened and personnelwore respirators.	.02	25	.5	32	0.16	213.14	1384
6941		P Sample of exhaust air from Spencer portable vacuum.	.02	1	.02	18	15	1.01	164
6942	1235	GA Steaming area during steam cleaning of "K" barrel.	.02	22	.44	32	0.91	34.97	268
6943	1417	GA During steaming of Omega feeder.	.02	20	.4	32	2.45	12.87	104

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ATTACHMENT B

The Saginaw NEWS

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September 7
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Partly cloud
Friday
▶ Weathe

Radioactive links linger

FRED KELLY
■ THE SAGINAW NEWS

The U.S. Department of Energy will look into reports that hundreds of workers at two defunct Saginaw factories suffered exposure to dangerous levels of radioactive chemicals.

The agency today was to release details from documents that indicate employees at the former Baker Perkins Inc. and Mitts & Merrill Inc. in the 1950s possibly were poisoned, while nearby air, ground and water were potentially contaminated.

Government officials hired the two companies and hundreds of others nationwide to process materials for nuclear weapons.

Developers want to use the old Mitts and Merrill site to build a $5.5 million medical building, and it is unclear how Wednesday's disclosure would affect the project.

Documents state that some of the companies did not take precautions to protect workers, pumped radioactive dust into the air and dumped toxic waste into ground and water, spokesman Thomas Welch said.

The companies handled substances such as uranium, thorium, polonium, beryllium and other toxic materials. High levels of exposure are linked to cancer, leukemia, lymphoma and kidney and respiratory illnesses.

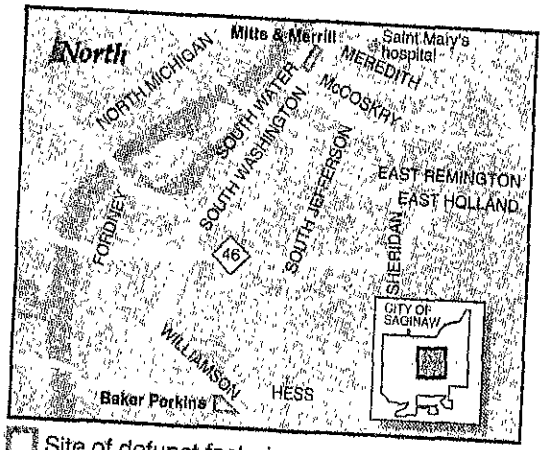
"It will take some time, but we have a responsibility to clean these sites," Welch said.

Department of Energy officials declassified records and identified 300 companies that apparently helped develop nuclear weapons.

Mitts & Merrill employed about 100 people to manufacture hydraulic equipment, machine tools, size reduction machines and shredders at 109 McCoskry before operations were shuttered in 1983.

Genesee Packaging Inc. later moved into the site, but has ceased operation. The city now owns the land.

PLEASE SEE NUCLEAR—A2▶



DAN JACALONE / THE SAGINAW NEWS

Blooc
neede

SCOTT DAVIS
■ THE SAGINAW NEWS
and THE ASSOCIATED PRESS

A summer-long blood drou
tinuing into September, but
gan officials say the start of s
help replenish supplies.

Saginaw Valley Blood Prog
Tittabawassee, this week is
its annual effort to visit all p
schools in Saginaw County in
for donors among students.
this week is at Arthur Hill Hig

"We're always looking for ne
said Gail M. Manntz, director
resources for the agency. "The
is critical. We're calling people
ing them to come into the blood

The shortage spans the Midv
Rummel, communications dir

AGINAW NEWS
Maurice
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NUCLEAR *Rumors had spread*

▼ CONTINUED FROM A1

Reports indicate the company crushed radioactive compounds there in the 1950s, and created high levels of radioactive dust.

Saginaw resident Jack W. Ranous worked for the company for 42 years, including eight as president.

Ranous, 79, said he was unaware the company processed radioactive chemicals, saying workers were not trained to handle such substances.

Doctors diagnosed him with cancer in 1994, but he said he does not believe his stint working in the factory caused his condition.

The illness has remained in remission for two years, he said.

Meanwhile, SSP Associates, a Saginaw Township development company, has submitted plans to spend $5.5 million to build a two-story, 60,000-square-foot medical facility at the site.

It is unclear how the disclosure might affect the project, said William L. Bailey, assistant to the city manager.

Some cleanup occurred at the site in the late 1980s, but "I'm not sure to what extent," he said.

SSP Associates is owned by Dr. Samuel H. Shaheen Sr. The Saginaw News could not reach him for comment this morning.

Baker Perkins, 1000 Hess, once employed more than 1,000 workers to manufacture equipment used in the chemical-processing and oil-refining industries before it closed 1987. B&P Process & Equipment and Saginaw Industrial Machining now operate at the site.

Documents state that Baker Perkins handled uranium in the mid-1950s, and indicate some potential for contamination. The Saginaw News could not reach executives for comment.

Former worker Harold Dycewicz, 72, of Saginaw said rumors have spread among retirees for about a year about exposure to radioactive chemicals.

State Department of Environmental Quality officials are overseeing cleanup at Baker Perkins, but it was not clear if they were checking for radioactive material, said Linda Brouillet, a district supervisor.

No records are on file for Mitts & Merrill, Brouillet said.

Kevin W. Datte, the director of environment health services for the Saginaw County Department of Public Health, learned of the issue from a News reporter.

Datte said he will now consider checking whether the situation presents a public health risk. ■

Fred Kelly is a staff writer for The News. You can call him at 776-9685.

CORRECTION

The Saginaw News, on this page, promptly corrects its errors of fact and responds to requests for clarification.

Terrance J. Pippins, 25, and Zollie L. Stewart II, 18, both of Saginaw, received dismissals from Saginaw County District Judge Kyle Higgs Tarrant on a charge of unarmed robbery Aug. 6 because the victim failed to appear for a preliminary hearing. Court records stated that the crime occurred at In & Out Party Shoppe, 3241 S. Washington. However, the business' owner said the crime occurred outside and some distance from the store.

About 25,000 drivers pass through the Tittabawassee and Bay intersection daily. A Wednesday report stated an incorrect figure.

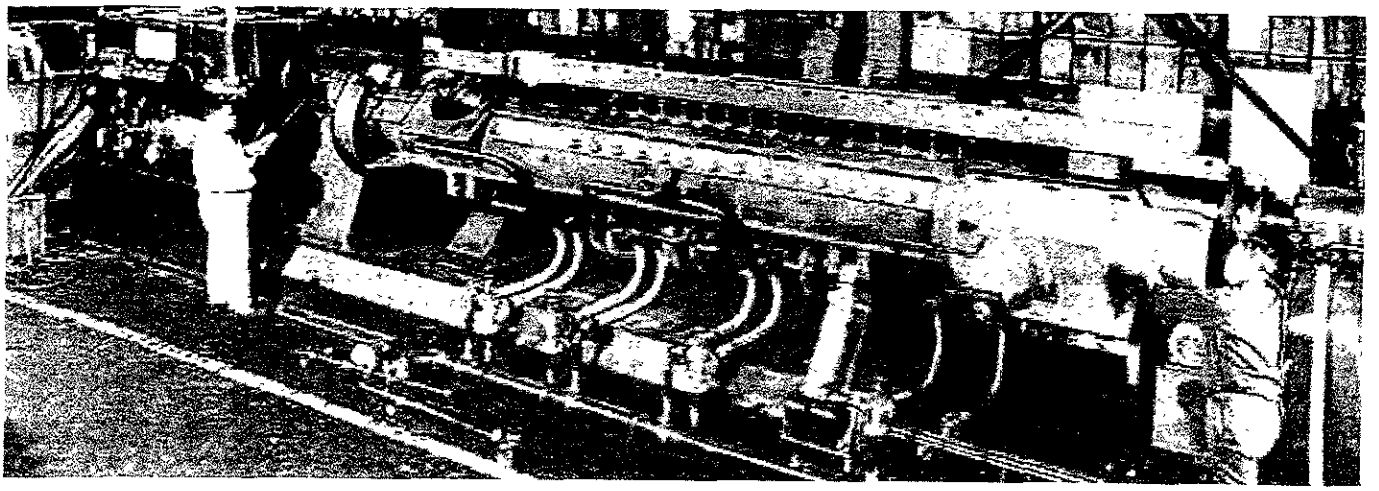
DEATHS

Anna L. Accardi, 94, Saginaw.

Gladys M. Burk, 87, Raleigh, N.C.

William P. Gough, 53,

NUMBERS



ATTACHMENT D

OFFICIAL REPORT OF PROCEEDINGS

before the

FINAL ADJUDICATION BRANCH

of the

U.S. DEPARTMENT OF LABOR

File Number:
Docket Numbers:

In the Matter of :

Place: Saginaw, Michigan

Date: July 22, 2008

U.S. DEPARTMENT OF LABOR
FINAL ADJUDICATION BRANCH

Michigan Works Bay Road Service Center
3875 Bay Road
Saginaw, Michigan 48603

Tuesday
July 22, 2008

The above-entitled matter came on for a hearing, pursuant to notice at 9:30 a.m.

BEFORE:

APPEARANCES

On behalf of the Employee:

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WITNESS	TESTIMONY
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EXHIBITS

EXHIBIT NUMBER	MARKED AND RECEIVED
Exhibit Nos. 1 through 10	44

P R O C E E D I N G S

(9:20 a.m.)

THE COURT REPORTER: I'm ready whenever you are.

All right.

I was going to go first and then [redacted] and then I guess Mr. -- [redacted] will go next.

HEARING REPRESENTATIVE [redacted] Okay.

Okay.

HEARING REPRESENTATIVE [redacted] Wait a minute.

You've got to read your statement.

HEARING REPRESENTATIVE [redacted] I've got to read my statement.

[redacted] You've got to read your statement.

HEARING REPRESENTATIVE [redacted] And swear you guys in.

Okay. Okay. That's right.

HEARING REPRESENTATIVE [redacted] I have to swear you all in first.

Getting ahead of ourselves here.

HEARING REPRESENTATIVE [redacted] Exactly. Exactly.

Too anxious.

HEARING REPRESENTATIVE: All right. We're on the record?

THE COURT REPORTER: Yes.

HEARING REPRESENTATIVE: Good morning. My name Today is Tuesday, July 22nd, 2008; and the time is 9:20 a.m. Eastern Daylight Time.

I am a Hearing Representative with the Final Adjudication Branch of the Department of Labor's Energy Employees' Occupational Illness Compensation Program.

I am currently in Saginaw, Michigan, and I have been designated to conduct this hearing and receive the objections of and for the death of

This hearing is convened under the Energy Employees' Occupational Illness Compensation Act, which I will refer to in the future as the Act, and is governed by the provisions of Title 20, Section 30.314 of the Code of Federal Regulations. These regulations provide claimants with the right to object to a Recommended

Decision of a District Office.

While the hearing is informal and not governed the Federal Rules of Evidence, I will administer an oath or affirmation to every person providing testimony today.

As I understand, [redacted]

I will first review the history of your claim as it appears in the written record. You may then present testimony, argument, and any additional evidence addressing the merits of your claim.

On July 28th, 2004, [redacted] iled a claim for benefits under the Act as the surviving child of [redacted] filed their claims on September 7th, 2004.

At that time you identified systemic histiocytic -- H-I-S-T-I-O-C-Y-T-I-C -- lymphoma as the condition resulting from your employment at an atomic weapons employer facility.

You filed an Employment History, Form EE-3, claiming that your [redacted] was employed at Baker Perkins Company in Saginaw, Michigan from November 7th, 1946 to July 12th, 1968.

The Department of Energy could not verify the employment, but the District Office was able to verify that your father was employed by Baker Perkins from

November 7th, 1948 to July 12th, 1968 from Social Security Administration earning statements.

You submitted copies of medical records including a September 2nd, 1980 consultant's report from [redacted] referencing a biopsy found to be mixed histiocytic lymphocytic diffuse lymphoma.

You also submitted a pathology report dated August 26th, 1980, which formed the basis of the cancer diagnosis.

You also submitted a copy of your [redacted] death certificate, which showed that he died on January 1st, 1982 of systemic histiocytic lymphoma. And we also received birth certificates from all of you showing that the Employee was your father.

The Cleveland District Office forwarded your claim file information to the National Institute for Occupational Safety and Health, which I'll refer to as NIOSH, to reconstruct the radiation dose that your father received in the course of his employment for his cancer.

The District Office undertook this action pursuant to the instructions set out in the regulations governing the Act.

The Act and the implementing regulations mandate that when a covered Employee establishes a cancer

diagnosis, NIOSH will prepare a radiation Dose Reconstruction.

In order to be deemed eligible for compensation under the Act, the Department of Labor applies a formula to the Dose Reconstruction in order to determine whether the covered employee's cancer is at least as likely as not related to the covered employment.

NIOSH provided the report of the Dose Reconstruction, and the Department of Labor found that there was a 38.02 percent probability that your father's cancer was causally related to his employment under the Act.

As such, on March 22nd, 2008, the Cleveland District Office issued a Recommended Decision under Part B of the Act stating that your father's cancer was not at least as likely as not related to his employment under Part B of the Act, and recommended denial of your claim under Part B.

On May 7th, 2008, the Final Adjudication Branch received your objection to the Recommended Decision and your request for an oral hearing. This is that hearing.

Your written objection was non-specific. Your claim was subject to a NIOSH Dose Reconstruction. The NIOSH Dose Reconstruction did not show that the Employee's cancer was at least as likely as not related

to his employment.

At this time, I have to say something about the NIOSH Dose Reconstruction.

NIOSH is given the full authority under the regulations that govern the Act to conduct the Dose Reconstruction used by the Department of Labor.

I am therefore not in a position to discuss the way in which NIOSH goes about preparing the Dose Reconstruction report.

I can discuss issues of a factual nature regarding the information you provided to NIOSH, but I'm not qualified to discuss the methodology employed by NIOSH in preparing the Dose Reconstruction report.

I am here to take your objections, enter them into the Evidence of Record, but I am not authorized to address NIOSH methodology.

I am now going to administer an oath to the three of you.

So if you could all raise your right hands.

(Witnesses sworn.)

HEARING REPRESENTATIVE All right.

We'll have the record reflect that all answered in the affirmative.

If you could all state your name one at a time,

HEARING REPRESENTATIVE: All right. Thank you very much.

Did you hear any mistakes in the opening statement that need to be corrected?

I know you don't agree with the Recommended Decision, but do we have the information correct as you see it?

Specifically do we have diagnosis dates correct, and do we have all of the cancers correct?

Yes.

HEARING REPRESENTATIVE: Anything else that we need? Employment dates? Okay.

So I'm pretty much going to turn this over to you.

TESTIMONY

All right.

I'm going to start first. And what I'm going

to address is the conclusions made by the Battelle Team Dose Reconstruction Project.

This is a Dose Reconstruction commentary where they said here's what happened, this is where it took place, and the Dose Reconstruction is concluded from that. They say okay, here's what went on, and I'm going to suggest that this report missed some vital aspects of it, okay?

HEARING REPRESENTATIVE Okay. Let me just sort of briefly go over it for you.

And one of the things they said was they talked about this was the document, it was a Site Profile for atomic weapons employers to -- for refined uranium and thorium; it took place at Baker Perkins; and that it was a test process with mixers at its laboratory facilities, a single building, and controls were in place; post-operational decontamination was implemented and having been performed.

And then they went on to talk about the period of time, May 14 to 15, they said there as a test performed involving approximately one to two drums of uranium trioxide, orange oxide with water and kneading machines, P and K -- KO-Kneader machines.

HEARING REPRESENTATIVE Right.

The decontamination of the equipment was conducted on May 15th and 18th at 19:56 and the cleaning included chipping, power-washing, brushing, steaming, food and air monitoring across the five day period.

Well, we took a look at this, and the only evidence we have is a flow meter report that describes the activities, and this is included in this document here that we're going to be giving you, which will include the letter to Gary Lobster, who was the Mayor of the City of Saginaw where Baker Perkins is located, and it includes a report fro who conducted an interview with a Baker Perkins Employee and discussed what happened at Baker Perkins, and that information was included in this battle assessment; that was then used to determine Dose Reconstruction.

And I'd like to comment on some of this to point out where I feel that they did not correctly interpret it, okay?

HEARING REPRESENTATIVE Okay.

Let's move on with this, and the first thing I want you to look at, and I don't know if you want me to give you these things now or later.

HEARING REPRESENTATIVE Now, would be

great especially if you're going to be referring to them.

But the first thing I want to note is a photograph of the, we identified as the kneading machine that was used in the test.

HEARING REPRESENTATIVE Okay.

This is a mixing machine that was used. You can see its scale and its size in relation to men working on it. So this wasn't a small little mixer. This was a very large, heavy, industrial machine that was being used to conduct this piece of equipment.

Now, in relationship to this equipment, and you can see it in the windows of Baker Perkins, I recognize the windows of Baker Perkins because at one time in my life I had an opportunity to visit the facility. This was in 1976 when I was working for Rifkin Scrap Iron. I was driving a truck.

And I would go to this facility to pick up scrap iron, and the reason I'm telling you this is that I was an observer of the kind of facility they had there. And what it was is this enormous building. It was a huge building. Very similar to an aircraft carrier or an aircraft hanger.

And you -- I would actually drive my truck into it, and I was picking up large chunks of scrap iron, and

they would have suspended a large crane, and this large crane would move throughout the entire facility picking up a huge box, in my case, of scrap, bringing it over, many, many thousands of pounds and putting it on my truck, and then I would drive out of the facility.

Now, the reason I point this out to you is within this facility all the necessary departments that were needed for manufacturing were in-housed in this great big building. You had a painting department, a welding department, an assembly department, and you probably had a laboratory.

Now, I wasn't familiar with all the departments, but as I stood around and observed the building out of the curiosity of what this place was, I could see that there were people welding and painting and assembling and machining and doing all these kinds of things in this enormous building, with windows and doors, and hundreds of people working on these very large pieces of machinery. So this was not a small test covered away in corner with a small piece of equipment in some out building as this report seems to imply.

HEARING REPRESENTATIVE: Okay.

Okay. This was a large building with a lot of people with a large piece of machinery.

HEARING REPRESENTATIVE G Was it an empty -- like, were there lots of rooms or --

Well, I guess the best way to explain it --

HEARING REPRESENTATIVE -- was it more of a warehouse?

-- is if you've ever gone into a Wal-Mart. You go into a Wal-Mart. There's this enormous building and you have various departments. There's a pharmacy department. There's an electronics department. They're all housed as separate departments, but they're all within the same building.

HEARING REPRESENTATIVE Okay.

Okay. So it seems to me that what we're looking at in the facility is a large building.

And now this will come into importance here as I begin to go through my comments on it.

Of course, the next thing we see is the letter to assuring him that there is no need for concerns at this time; that nothing bad happened here; that there isn't any need for it.

And then I will turn you to and have you look at the letter that prepared for Baker Perkins, and he went on to say, well, I attached this memorandum

and documents about Baker Perkins about the site that I went to, and they said that in here he says, well, they mixed uranium trioxide, orange oxide is what it was identified as, in their KO-Kneader on May 15th through -- 14th through 18th.

Now, apparently he never went to the site. He conducted a telephone interview of a former Baker Perkins Employee who joined the company in the mid-70s, which was nearly 20 years after this event.

HEARING REPRESENTATIVE: All right. And he sent a contact report, which I'll go into. He interviewed him and asked him, well, what happened 20 years before you were employed? And the guy said basically, well, I don't know; okay, is essentially it. He wasn't there.

But he evidently looked at something and he concluded that the short durations of the test just for four days, and evidence of equipment clean up, and I emphasize equipment cleanup, in what we're going to refer to is, in this report here, the analytical data sheet, you're talking about the mixers; this large machine I showed you.

HEARING REPRESENTATIVE: Right. The potential for residual radioactive contamination in excess of the current DOE

guidelines is considered remote. Okay?

HEARING REPRESENTATIVE Okay.

Therefore, we recommend that this site be eliminated for further consideration as a candidate for remedial action under FUSRPA [sic] and removed from the SRSUPRA [sic] considered site list.

So basically he concluded through this telephone interview with a guy who started working there 20 years after the fact that this was a good cleanup, they cleaned the equipment up, and that only one or two barrels was involved in this, and hey, no problems; there's not a problem with it.

And also they weren't aware if it was one or two barrels either.

Okay. I'm getting to that.

Now, he went on here, and this is his written report where he talked about a survey of works once again of test equipment.

So, once again, this was in the cleanup only of the test equipment, all right?

HEARING REPRESENTATIVE All right.

Which is this mixer, okay? And he concludes that, well, while there was a dispersion [sic] of dust is noted in small quantities involved in a brief period of operation, this -- any residual

initiation or some sort of word here is unlikely. So apparently he didn't think that the dust that was distributed during the course of this activity was of any consequence.

Now, my sister brought up this issue of the barrel here -- and I'll address this now -- but in the Battelle Report they said that the quantity was one to two barrels.

I want to emphasize that there were -- they have a guesstimate here of 100 percent. They don't know if it was one barrel or they don't know if it was two barrels.

Now, what are we talking about? We're talking about nuclear powder, radioactive material, okay? Now, granted, this was 1956.

HEARING REPRESENTATIVE '56, yes. Okay.

And, today, if somebody said to you, well, you know, we had a test with nuclear powder and we don't know if we had one barrel or two barrels, I think people would be pretty upset. Okay?

So if you're going to say that current policies apply, and under current policies I think we begin to see that if we applied the current policies to what they did back in 1956, we're going to have some real problems with

this test, and I'm going to go through what some of these problems will be, okay?

HEARING REPRESENTATIVE Okay.

Number one, we don't know how much material was delivered to the site. We know that it was at least one barrel. It could have been two, but it could have been ten or it could have been 20. But more importantly, we don't know how much material was returned. You see, they don't know how much those barrels weighed.

I would assume today that under current policies if you had a barrel of contaminated uranium sent to your building, you would know what it weighed, and if you did some mixing process that involved dust distributing, that they would say to you, you better collect that dust and put it back in that barrel and send that back with it, so we better make sure we got it all back.

Well, they don't know what they got back. They don't even know how many barrels they sent. So there's a great deal of question here as to whether or not nuclear material remained at that site after the test, and thus the workers at that site may have suffered contamination through an extended period of time indeed through the entire period of employment.

Indeed, I could suggest to you that had this Mr. Stout gone there with a Geiger counter and examined the facility, he might have picked up residual nuclear waste.

Let's take a look at how this test was conducted. And the only witness to it is this analytical air quality report that was done by some individual. I don't have the name, but it said by a lab -- by a lab, and then we have some initials, and Who these people were, I don't know. But evidently they were people who were assigned to observe what was happening during the course of this test, and they noted it on something called an analytical data sheet.

Now, this is not a data sheet that the nuclear energy commission gave them. My -- I once worked as an inspector for a company, and this looks like the kind of company record that you would have that you would fill out for the company as they went about testing some sort of a product, okay?

And I suggest to you that this was a Baker Perkins document where when they processed materials or did some sort of a test for a customer, they would make some record of it so they would have it for their engineering and their sales staff, okay? I can't prove this, but I think if we were to, you know if this were to

go to a court or something like that that this is the kind of thing we would have to determine.

So we have this thing, and it went on and it talked about what was going on. When the first page of it, you don't have it with you, but you can reference it at a later time when you get these documents.

HEARING REPRESENTATIVE Okay.

The first page starts out with a sample and they talk about how much water was used during the course of this, and there were three batches of 130 milliliters or something of water going through it, but that isn't really -- this was -- and ultimately they said it was discharged to river during steam cleaning. I suggest it was dumped in the drain. Not that this matters to me, but the drain at that time in '57 did go to the river. We don't do that today, but it did then. Anyway.

HEARING REPRESENTATIVE I would hope not.

But the next page, if you look at the analytical data sheet here, they went by sample numbers, and they did them in numerical order, okay?

As to they take samples apparently from this barrel, and what it does is it shows us how this test was

conducted, and it really has some interesting aspects that I think we need to get from this. The first one I want to look to is [redacted] and it talks about how they put it into the feeder. It says, scooping orange oxide into Omega feed hopper. Dust-foe respirator worn. In other words, this guy was wearing a respirator as he was putting this dust into it.

Now, this is 1957 and they're dealing with nuclear material. Today, if you were dealing with nuclear material, I would suspect you would have on a complete hazmat outfit. So it shows that these people were not trained or understood the nature of the material that they have.

But as we go through this, I want you to ask this question: We're in 1957, this is the era of McCarthy; nuclear -- we were involved in a nuclear confrontation with the Soviet Union. Nuclear weapons were a big deal. It was very secret. As we go through this, ask yourself, did these men really know what they were doing? They may have been working with something called orange oxide, but was that a chemical that some company like Dow Chemical may use to make paint. Were they really told the nature of the material that they were using?

And as we read through this witness, this

document that tells us how these men were handling this material, we have to ask ourselves, were they really told this or was this a Federal secret? And the men operating had no clue as to the material they were using. We don't know this today, but as we look at the way in which they handled it, would a reasonable person have handled nuclear materials in the way that this witness said they did?

Let's go through this. Okay, so we see now they're scooping it in, they are wearing a respirator.

In this is after one, two, three, four, five, six, batches were put into this. The observer makes this comment: the operator was very careful in scooping material from the drum to the hopper. However, no matter how careful, the scooping produces a very fine, barely visible dust which disperses in the air around the machine.

Okay? So what we're taking is dust being shoved into a machine by an operator, and the air, and it's being dispersed into the air. Let me remind you that when we get to cleaning, there's cleaning of machines but there's no record anywhere that they cleaned the floors, the walls, the ceilings, or other equipment in this Wal-Mart box factory. Okay?

Let's move on. Now, in KO-kneader area

during calibration of Omega feeder, material fed through feeder and dropped into cardboard container from sample chute. Only visible dust was when box was removed and empty.

So what they did was they said well, we got to get it out of the machine now. So they put it into a cardboard box. Would putting orange oxide today be considered appropriate to dump it into a cardboard box on the floor of a factory? Okay? And apparently dust was in there.

Okay, let's move on to sample 6908: Water line was plugged after a few minutes of operating time and the water supply was cut off. Dry material dropped into product drum at discharge, causing considerable dust.

Let's look at A, same as luring second test run. Some dusting as wet material falls into drum on top of dry materials. Vacuum hose from Spencer inserted in a drum to reduce amount of escaping dust. Water line plugged again towards end of sampling period (simultaneous with test period) and more dry material dropped from barrel resulting in more dust.

Once again, we have -- but at this point we have an introduction of a vacuum system to try to vacuum this machine out. Now we have HEPA filters to protect our children from pet hair and dander and who knows what

on our vacuums today. Back then all they had were little paper filters, so what affect did nuclear material being sucked into a vacuum and forced out into the air, what does that affect upon the environment in the factory?

Okay, KO-Kneader during hand scooping of material into feeder hopper. Machine operated during this period.

hand scooping material into feeder hopper form drum. Dust-foe respirator was worn.

continuation of except when drum was almost empty polyurethane [sic] er was pulled out and remainder dumped from liner in the feed hopper.

This gives us an idea of what kind of barrel they had. They had a barrel with a plastic liner in there, and this is going to have a, I'm going to, you know, remark on this when we talk about how they concluded their operations. Okay.

6916: at this point it was decided that the mixing could not be done with the "I" Type [sic] or Type "I" [sic] KO-Kneader; that Type "K" would be better. Decontamination of [sic] KO-Kneader started at 1:40 p.m.

Okay, so in the middle of this test they decided to decontaminate the first machine because they decided this wasn't working for some reason. We don't know what the reason was. So I can envision that this,

they decontaminated or basically took the material out. And when we talk about decontamination, are we talking about what we would think of the decontamination today? Or are we just talking about getting the dust out, okay?

HEARING REPRESENTATIVE Okay. All right.

And so they would come and with a crane they would pick up this huge machine, they would pull it out of there to some other part of the plant, and then apparently they would bring in another.

Okay, KO-Kneader [sic] during initial decontamination phase; chipping dried oxide cake from the wings and teeth and using flat vacuum tool attachment to vacuum loose material from barrel.

So they vacuumed it through the barrel, but once again let me remind you how a vacuum works: you suck this nuclear material into it; some of it collects in there, but how much of it is blown out into the factory?

Okay, removing barrel from machine and placing on paper on floor for cleaning.

So apparently they moved something out of the machine and they put it on the floor for cleaning. Apparently they put down some paper on the floor and they cleaned part of this machine on the floor. I guess my question is, if you were to take a -- something out of a

machine, a component from the machine, covered with orange oxide, put down a sheet of paper and set it on there and then cleaned it off, would or would not some residual nuclear powder be on that floor?

Okay. Chipping and vacuuming loose material from wings, teeth. No respirator worn. Now, if you were told here, we're going to have you work with orange oxide, a nuclear material, would you take off your respirator if that's all you had to wear? Did these men clearly appreciate what they were working with, or was that a national secret?

Okay, cleaning barrel with pneumatic powered circular brush; dust-foe respirator and goggles were worn.

Now, okay. So they were cleaning it out with this brush, spinning brush cleaning, blowing the stuff around, getting it off of that because it's caked onto this machine.

Okay, sample of exhaust from Spencer vacuum which was exhausted into room.

So they took a sample of what was, we do have some kind of dust sample of what was coming out of the vacuum cleaner they were using.

HEARING REPRESENTATIVE GRABER: All right.

Okay. a rather

unusual line: some dumping done during sample 6931.

When somebody says they dumped something, I'm inclined to think they dropped it on the floor. Okay?

HEARING REPRESENTATIVE [redacted] It doesn't say where it was dumped?

[redacted] Doesn't say where it was dumped, but it got dumped.

HEARING REPRESENTATIVE [redacted] Okay.

[redacted] Didn't say it went in the barrel, which I would think that that's what you'd want to do. I guess what I'm trying to get is this is a casual environment. It's as if they were working with flour, okay? It's not as if they were working with a nuclear material, so they dumped this somewhere. Okay? We don't know where, but he noted this as something unique, something special; I dumped it. Okay, he dumped something. Okay.

And then basically they continued chiseling in 6932. They started KO-Kneader area during start of decontamination. They tell how they decontaminated. They vacuumed it, they chiseled the caked UO3 from screw and barrel. The feed hopper was removed. They used hammers and chisels to get the caked up material. They did wear their respirator and goggles. And they vacuumed this material from the screw and the barrel.

Okay. Once again, more cleaning with brushing. 6938, more cleaning. More power brushing.

And then [redacted] GA same as [redacted] Okay, so it's the same as what they were doing earlier: this was probably the dustiest of the decontamination jobs. Doors and windows were opened and personnel wore respirators.

So this job of decontaminating this machine was so dusty from this orange oxide that they -- somebody said let's open the windows and the doors to let the air come in and blow this stuff around. And it was so bad that the personnel involved were all wearing their respirators because, well, they were breathing in this noxious powder.

HEARING REPRESENTATIVE GRABER: Okay.

[redacted] Okay. And they went on and started steam cleaning the area. Steam cleaned the area during steam cleaning during -- they did some more steam cleaning.

So basically they steam cleaned the machines, and the machines were clean because they went in there and chipped it out, they vacuumed it out, they steam cleaned it off when they were done.

And by the way, when you steam clean, you use steam which has water. It washes the material off. Well, where does it go? You have a huge machine.

[redacted]

HEARING REPRESENTATIVE: All right. And you're steam cleaning this machine off to get the dust off of it. What happens to the residual liquid? Well, they probably put it on the floor. I mean, it's not like a lot of liquid. It's enough to go on the floor.

So our contention is this: This was not a limited nuclear event. This didn't happen during just four days with a little bit of dust. This was a dusty, dusty, dusty environment where men were chipping and grinding and vacuuming and blowing this material all around. And they cleaned the equipment up and hauled that away and did something with it.

But there's no record whatsoever that they cleaned the floors, the walls, the other equipment in the area, the tables, or even the surrounding area after they opened the doors and windows where people eat their lunch presumably on the grass in the summer or park their cars.

So this dust that -- this orange oxide dust, just from this witness that we have here, was apparently all over the place. Certainly all over that area. And likely allowed to float through the shop when they opened the windows and the doors to blow this stuff around.

So our contention is if you're going to do a Dose Reconstruction, you can't just say, look, you know,

we had this incident for four days, and sure, he may have been in there grinding and chipping away with his little respirator, but you know, it was just a short-term exposure, and then we cleaned it up, we cleaned up the equipment and that was the end of it, there's no problem here; this is a much more serious matter.

If you were to say today that we had dust in such quantities of orange oxide dust that we had to open up our windows and doors and let it blow around the place, I think you'd have the hazmat guys closing you down like right now, okay? I think that would be a very serious nuclear problem because this dust is in the area. It's there where these men worked for at least 40 hours a week. They are exposed to it constantly and chronically.

So when you're going to do your Dose Reconstruction, you can't just take this limited event and figure the matter ended on the 18th. This dust was in that building; they were ingesting it, they were breathing it, they were next to it; likely, I'd say more likely as not that that stuff is still in that building today.

HEARING REPRESENTATIVE [redacted] Does the building still exist?

[redacted] Yeah, there's a building there, yeah. They use it as a warehouse.

HEARING REPRESENTATIVE: Okay.

So this, I think that the assessment of the Battelle Reconstruction and the individual and calling up the old timer who was employed in 1970, 20 years after the event, and not really looking at what this document means, shows that there was an error in the assessment that they made in the Dose Reconstruction; that this Dose Reconstruction should assume a intense exposure to nuclear material over an extended period of time.

, it would be until 1968 when he left the facility. Not just a short-term exposure and then assuming some ingestion that sort of worked its way through over a 20-some year period, but may or may not have been, or was not as likely to have caused it as we would have thought.

HEARING REPRESENTATIVE: Okay.

That's all I have to say now. I may wish to add more later.

HEARING REPRESENTATIVE: Okay, thank you.

Just a couple of comments, I work for a community college. I'm a manufacturing engineer up there. I teach classes there. I have an opportunity to visit a company that uses

equipment similar to this called Dawn Foods. If you had a roll or a bun this morning at your motel where you stayed, it probably was produced by them. In that area they mix flour every day. They do an extreme method of cleaning to keep that material out of the air; large vacuum systems which were not in place back in the 50s.

HEARING REPRESENTATIVE: Right.

Also the type of respirators that were used at that time are not what we see today. Even the paper masks I think that we have that are NIOSH are rated are much better, the ones that we can buy at K-Mart or Meijer's, are much better than what you have back at that time. So when they talk about what people wore as protective clothing, they never talked about any garments. The clothes that these gentlemen wore while they were working in the facility went home with them.

HEARING REPRESENTATIVE: Uh-huh.

They were not washed or cleaned at that facility. The boots that they wore with this material all over the floor when they were steam cleaning, and remember the amount of water that's generated with steam cleaning, it's all throughout their clothes, soaked into their socks, went home with them.

HEARING REPRESENTATIVE: Right.

Just a comment that, you know, this process that was there is not just a little, simple little one- or two-day event.

HEARING REPRESENTATIVE Right. That there was much more to this than -- especially what that document shows you what went on. I'll have some other comments a little later.

HEARING REPRESENTATIVE Okay, thank you.

I guess I'd just like to clarify some inconsistencies that were in the reports, and I do have copies for you.

HEARING REPRESENTATIVE Good. I'd just like to have this on the record.

HEARING REPRESENTATIVE Okay. You have a packet right before you there, dear.

HEARING REPRESENTATIVE Great. The report dated 2-5-05, I understand there were two Dose Reconstructions done on my father. The ones on 2-5-05 and then there was one done on 9-14-07.

HEARING REPRESENTATIVE Right.

The report of 2-11 clearly stated Mr. Brennan was employed at Baker Perkins as a grinder, unlike the report of 9-14 that stated Mr. Brennan's position was unknown. I'd just like to have that clarified into the record.

HEARING REPRESENTATIVE: Okay. Was he a grinder?

Yes. He worked in the grinding room which was the mill room. That's where they ran the mixers and that.

HEARING REPRESENTATIVE: Okay. Okay. So he was running the mixers.

And then another inconsistency, I guess, I would like that on the record, that the report of 9-14-07 clearly stated that was exposed to an internal and external sources of radiation during his employment at Baker Perkins.

The report of 9-14-07 does not include the exposure dates from 1956 to 1980, that was the time of his diagnosis, which is a 24 year time frame, unlike the one year of the internal exposures from 1-1-56 to 12-31-56.

HEARING REPRESENTATIVE Okay.

And the external rates were only based upon one year, that being in 1956.

HEARING REPRESENTATIVE Right.

endured exposures from May 1956 to July 12th, 1968 when he was separated from the organization. It was a voluntary release.

As stated in the 9-14-07 report, was exposed to internal and external sources of radiation.

I want to explain one thing, I've read a couple articles; one was by the *Uranium Review of Properties, Origin and Potential Effects*: Both alpha and beta particles penetrate the cell membranes, hence, ingesting, inhaling, or absorbing radioactive materials capable of emitting alpha and beta particles and placing themselves inside the delicate body parts such as lungs, heart, brain, kidney, possess a serious health threat to the human health.

This is just a model that they have in here, and you'll have a copy of this, just showing the route of the system of how the, when it becomes inhaled or ingested can continue to circulate it through the lymphatic system, which my father was diagnosed with lymphatic system --

HEARING REPRESENTATIVE [redacted] Right.

As I mentioned earlier, uranium particles stay internally lodged for considerable amounts of time. The diagram shows the various paths to the damaging particles within the body.

Once the particles have entered the human body, via ingestion or inhalation, it is circulating in the blood system or retained in the lung tissues or both. The particles of the lung can enter the lymph nodes and remain indefinitely.

As a report that I had from [redacted] (ph). He is a consultant with the Dose Reconstruction project, stated, quote: "The lymphatic system can be assured to spread wildly throughout the body, and although concentrated in the chest and abdomen, it has components throughout the body, thus showing that the lymphatic system circulates the blood and components in the human body," unquote.

Showing that my father had one of the special cohort cancers too within the lymphatic systems, I would like to request that the case be re-evaluated to include the lung model. This was based upon evidence of one claim, one paid claim to the Baker Perkins, which I have a copy to view.

This is dated June 3rd, 2005 where this was one

[redacted]

and only claim where the gentleman did die of lung cancer. It appears that they've done different calculations using the lung model versus the lymphatic systems which they used or

There was only -- I guess when you read through the report you're going to see that the internal dose alone was determined to be only one Dose Reconstruction to complete showing that just this lung model was all they had to use for this particular person.

Both employees were in the same workplace, same work environment, same time weighted averages within the time of this testing. I guess I see really an inconsistency where one claim which had a lung cancer and also my father had a diagnosis of lung cancer. I have copies of his medical reports that he has lung nodules, which are lymphoma, into his lungs. And I'll have copies of those too for you.

Also I have a copy of the Saginaw News article dated September 7th, 2000. Reports indicate the company crushed radioactive compounds there in the 1950s. [redacted] of the organization was unaware of the process and stated that employees were not trained in handling such substances. I am sure that this is true. The organization did not train nor document incidents as shown in the report for [redacted]

in the report dated June 3rd, 2003. Neither Employee, this is the Employee that was paid to claim, had a dosimetry badge worn or bioassay records were found, thus showing the employer was not aware of proper monitoring of the employees.

So neither this individual or my father they could indicate any type of records that they wore any type of monitoring or were monitored during the course of their employment with Baker Perkins when this testing went on.

And I ask that this claim be re-evaluated for payment under the Special Cohort under 42 C.F.R., Part 33 [sic] as case is defined as a special cancer diagnosed under the special cohort.

HEARING REPRESENTATIVE Okay.

And we have all the documentation for you.

HEARING REPRESENTATIVE Okay.

If there's no other testimony we can start marking Exhibits, getting them into the record.

Okay.

HEARING REPRESENTATIVE C We can do that now.

Is that my packet?

Just -- yep. I think this

is your packet right here. And you got a couple other things.

Just, in order to summarize, that this was -- granted, we only had the one witness, the observer that I was reading the material.

We have inconsistencies in how they went about from one person to another in coming up with their determination, and I think we need to look at the incident itself as being much more serious, longer duration of incident than what we -- than what they had originally looked at when they made their initial assessments, and we'd like things re-evaluated on those basis.

HEARING REPRESENTATIVE And this packet here, do we have all of the Battelle Report? Yes, we do. Okay.

Can we start marking these.

One other comment I know on the model, the mathematical model that they use, you're not able to talk about that -- but looking it over the best I could from the information I could find on the Internet, it seems to have some issues as you generate it out over a period of time, that does degenerate the mathematical models which is typical when you do a proof of a model. They typically don't hold up under changes.

In other words, they're designed only for one particular way of doing things, and when you add a variable to it, it does, the model is no longer a valid model.

HEARING REPRESENTATIVE (Okay.

And I have issues mathematically on how this worked out that it is not really sound scientifically, and I haven't spent the time doing the proof on it, but I believe I would -- I could do that very easily in a period of time.

So I think that needs to be looked at much more carefully than -- I think they also know that. I think there's been some papers written on that recently.

HEARING REPRESENTATIVE Okay.

Let me just do my little spiel to get these in the record. We're marking Exhibits.

The first Exhibit is the photo of the machine at Baker Perkins.

HEARING REPRESENTATIVE Exhibit No. 2 starts out with a letter to dated March 4th, 2008. It's the NIOSH Dose Reconstruction from 2007.

HEARING REPRESENTATIVE Exhibit No. 3 is from -- is the cover letter information transmittal date January 10th, 2002, to

Right. That's a cover

letter --

HEARING REPRESENTATIVE Right.

[redacted] picked that, got that whole series of documents because the Saginaw News referenced a letter to [redacted] We wanted that documentation and that's what we got from him.

HEARING REPRESENTATIVE [redacted] Right.

And contained in that p[redacted]he letter to Mayor Lobster, a OTS note to [redacted] A record of contact dated January 28th, 1991. Memorandum dated February 11th, 1991. And the analytical data sheet that Mr. Brenna referenced in his testimony.

HEARING REPRESENTATIVE [redacted] Let's see.

Exhibit No. 4 is a letter to [redacted] dated December 16th, 2005 from [redacted] and it has to do with your FOIA request back in 2005.

HEARING REPRESENTATIVE [redacted] Exhibit No. 5 is the Dose Reconstruction report draft, page 4 of 11.

Is this the one from 2005? This doesn't say on my copy.

Yes.

HEARING REPRESENTATIVE [redacted] Okay.

I think I -- because I just wanted to highlight --

HEARING REPRESENTATIVE [redacted] Right. Okay.

Just making sure.

That's the one from 2005?

Yes.

HEARING REPRESENTATIVE And that's Exhibit No. 5.

HEARING REPRESENTATIVE xhibit No. 6 is the diagram that shows how al on goes through the system. That's Exhibit No. 6.

HEARING REPRESENTATIVE Exhibit No. 7 is the Saginaw General Hospital consultation report dated October 1st, 1981 on

HEARING REPRESENTATIVI Exhibit No. 8 is a consultation report from Saginaw General Hospital dated December 2nd, 1981 on your father.

HEARING REPRESENTATIVE have a couple more to go.

But in the meantime, while those are being marked, what I will do is tell you a little bit about what's going to happen from here.

As you know, we're being recorded, and these proceedings are going to be transcribed, and as soon as I get a copy of the transcript I will send a copy to each of you.

You'll have 20 days from that date to make any corrections to the transcript, offer any comments to the

transcript. You need to send that right back to me.

I'll also leave the record open for another 30 days, and during that time if you have anything else you want to let me know, any other Exhibits; if you get home and you realize, oh, I really meant to talk about X, Y, Z and I completely forgot, give me a call, send me a letter, send me a fax, and you have 30 days to do that.

And anything that you submit then will also be included along with everything else in the file, the transcript of this, all of the Exhibits.

And really anytime after that 30 days I can make a Final Decision, and like I said, the Final Decision will be based upon everything that's already in the record plus this hearing and anything else you submit within that 30 days.

And it looks like we have more Exhibits that have been marked.

Exhibit No. 9 is the Saginaw News article dated September 7th, 2000.

HEARING REPRESENTATIVE [redacted] A Federal Register Notice dated May 28th, 2004.

That was Exhibit No. 10. And I think that's it.

(Whereupon, Exhibit Nos. 1 through 10 were marked and

received into evidence.)

HEARING REPRESENTATIVE: And if there's no other testimony to be given, I will close the record.

And it's now 10:15 a.m., and the hearing is closed.

(Whereupon, at 10:15 a.m., the hearing in the above-entitled matter was closed.)

C E R T I F I C A T I O N

This is to certify that the attached proceedings before

In the matter of:

File Number:

Docket Numbers:

Place: Saginaw, Michigan

Date: July 22, 2008

were held as therein appears, and that this is the original transcript thereof for the files of the U.S. Department of Labor, Final Adjudication Branch.

ATTACHMENT E

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

NIOSH Tracking Number: 18339

National Institute for Occupational Safety and Health
Robert A. Taft Laboratories
4676 Columbia Parkway
Cincinnati, OH 45226-1998
Phone: 513-533-6800
Fax: 513-533-6817

March 4, 2008

This letter is to provide you with information on the status of the claim you filed under the Energy Employees Occupational Illness Compensation Program Act (NIOSH Tracking Number

The National Institute for Occupational Safety and Health's (NIOSH) Office of Compensation Analysis and Support (OCAS) has completed a reconstruction of the radiation dose for your claim, conducted a closing interview with you, and received a properly signed OCAS-1 form. Enclosed you will find a copy of the final NIOSH Report of Dose Reconstruction under the Energy Employees Occupational Illness Compensation Program Act (EEOICPA).

We have forwarded a copy of the enclosed final dose reconstruction report to the appropriate Department of Labor (DOL) District Office of the Office of Workers' Compensation Programs for their use in adjudicating your claim. We have also sent a copy of this report to the Department of Energy.

If you have any additional questions regarding your claim, please feel free to contact us toll-free at 1-800-CDC-INFO (1-800-232-4636). You can also email us at ocas@cdc.gov or contact our office directly at (513) 533-6800. Additional information on OCAS can also be found on our Web site at http://www.cdc.gov/niosh.

Sincerely yours,

Larry J. Elliott
Director
Office of Compensation Analysis and Support

Enclosures

NIOSH OCAS

NIOSH Report of Dose Reconstruction under the Energy Employees Occupational Illness Compensation Program Act (EEOICPA)

NIOSH ID:	Social Security No.	DOL District Office
		Cleveland

Energy Employee Name: *Last* *First* *Middle* *Date of Birth*

Covered Employment:

Cancer:

Calculations Perfo

Peer Review Comp

Dose Reconstructic

Introduction

The Energy Employees Occupational Illness Compensation Program Act of 2000 (EEOICPA), Executive Order No. 13179, and the Radiation Dose Reconstruction Rule (42 CFR 82)[1]

EEOICPA established a compensation program to provide a lump sum payment of $150,000 and medical benefits as compensation to covered employees suffering from designated illnesses incurred as a result of their exposure to ionizing radiation, beryllium, or silica while in the performance of duty for the Department of Energy and certain of its vendors, contractors, and subcontractors. This legislation also provided for payment of compensation to certain survivors of these covered employees.

In Presidential Executive Order No. 13179, the President designated the U.S. Department of Labor to administer this program for claims by current and former employees of nuclear weapons production facilities and their survivors who seek compensation for cancers caused by radiation exposures sustained in the performance of duty. The Executive Order also directed the Department of Health and Human Services to estimate (reconstruct) the radiation doses received by these employees. The Department of Labor uses the reconstructed radiation dose in evaluating whether the employee's cancer was at least as likely as not related to employment at the facilities covered by EEOICPA. To fulfill the responsibilities assigned to the Department of Health and Human Services, the National Institute for Occupational Safety and Health's (NIOSH) Office of Compensation Analysis and Support (OCAS) completes dose reconstructions using the methods described in the Radiation Dose Reconstruction Rule (42 CFR 82)[1] for the Department of Labor's use in making compensation decisions.

The Purpose of Radiation Dose Reconstruction

A radiation dose reconstruction is used to estimate the radiation dose received by the specific organ(s) in which a worker developed cancer, particularly when radiation monitoring data are unavailable, incomplete, or of poor quality. Even in instances when radiation dosimetry data are available, they rarely specify dose to an organ and often are based on monitoring procedures that do not meet modern standards.

The basic principle of dose reconstruction is to characterize the occupational radiation environment to which a worker was exposed using available worker and/or workplace monitoring information. In cases where radiation exposures in the workplace environment cannot be fully characterized based on available data, default values based on reasonable scientific assumptions are used as substitutes.

EEOICPA recognized that the process of estimating radiation doses would require dealing with uncertainties and limited data and thus required that the government establish methods for arriving at reasonable estimates of radiation dose received by an individual who was not monitored or inadequately monitored for exposures to radiation, or for whom exposure records are missing or incomplete. To the extent that the science and data involve uncertainties, these uncertainties are typically handled to the advantage, rather than to the detriment, of the claimant. NIOSH has used the best available science to develop the methods and guidelines for dose

reconstruction. These methods have been reviewed and commented upon by the public, including experts in the field of dose reconstruction, and the Presidentially-appointed Advisory Board on Radiation and Worker Health.

How Radiation Doses Are Reconstructed

NIOSH reconstructs radiation doses by evaluating all available, appropriate data relevant to the employee's radiation exposure. Some examples of data that may be included in the dose reconstruction include, but are not limited to, internal dosimetry (such as results from urinalysis), external dosimetry data (such as film badge readings), workplace monitoring data (such as air sample results), workplace characterization data (such as type and amount of radioactive material processed), and descriptions of the type of work performed at the work location.

Although the specific methods used for each dose reconstruction may vary, after a claim has been referred by the Department of Labor to NIOSH for a dose reconstruction, NIOSH typically requests the worker's personal radiation monitoring information from the Department of Energy. Upon receipt of the requested information, at least one voluntary informational interview with the claimant and/or survivors is conducted and a copy of the interview report is sent for review. After all of the necessary and available information is gathered, a dose is estimated, using the methods in the Radiation Dose Reconstruction Rule. After a NIOSH health physicist reviews the information, methods, and results, the claimant receives a draft copy of the dose reconstruction report followed by a concluding interview, during which the claimant can add any additional relevant information that may affect the dose reconstruction. If the claimant certifies that he/she has completed providing information and that the record for dose reconstruction should be closed, a final dose reconstruction report is sent to the claimant, the Department of Labor, and the Department of Energy.

As applied in the EEOICPA, dose reconstructions must rely on information that can be developed on a timely basis and on carefully stated assumptions. Therefore, the guiding principle in conducting these dose reconstructions is to ensure that the assumptions used are fair, consistent, and well-grounded in the best available science, while ensuring that uncertainties in the science and data are handled to the advantage, rather than to the detriment, of the claim when feasible. When dose information is not available, is very limited, or the dose of record is very low, NIOSH may use the highest reasonably possible radiation dose, based on reliable science, documented experience, and relevant data, to complete a claimant's dose reconstruction. In other instances, NIOSH may not need to complete fully a dose reconstruction because a partial dose reconstruction results in an estimated dose which produces a probability of causation of 50% or greater.

How Radiation Dose Reconstructions Are Used in Final Compensation Determinations

The results of an employee's dose reconstruction are used by the Department of Labor to determine the probability that a worker's cancer was "at least as likely as not" due to his/her occupational exposure to ionizing radiation during employment at a covered facility. Criteria and guidelines for making this determination are established by EEOICPA and the Probability of Causation Guidelines (42 CFR 81).[2] The dose reconstruction is not the final determination of a claim, but rather an interim product that is used by the Department of Labor in making its final

decision. Final determinations are made by the Department of Labor based on standards determined by EEOICPA and its implementing regulations.

Dose Reconstruction Overview

The Office of Compensation Analysis and Support has performed a dose reconstruction for [redacted] in accordance with the applicable requirements of the Energy Employees Occupational Illness Compensation Program Act (EEOICPA). Information provided by the Department of Labor (DOL) indicated that [redacted] worked at Baker-Perkins Company from November 7, 1948 through July 12, 1968. [redacted] position at the facility is unknown. No dosimetry or bioassay records could be found for [redacted] related to work by Baker-Perkins for the Atomic Energy Commission (AEC, one of the predecessor agencies of the present Department of Energy).

Baker-Perkins manufactured commercial mixers (among other products). On May 14 and 15, 1956, Baker-Perkins performed a test of its mixing equipment for National Lead of Ohio. The tests involved mixing approximately 1to 2 drums of uranium trioxide with water and kneading the mixture with the Baker-Perkins "P" and "K" Ko-Kneader machines. This test process was conducted in a single building. Decontamination of the equipment was conducted on May 15 through 18, 1956.

It was verified that [redacted] was diagnosed with histiocytic lymphoma on August 26, 1980. Based on the guidance in the Technical Information Bulletin: Internal Dosimetry Organ, External Dosimetry Organ, and IREP Model Selection by ICD-9 Code,[3] internal dose and external dose to the lymphatic tissue was evaluated for potential exposure starting in 1956 until the time of cancer diagnosis in 1980. [redacted] dose reconstructed under the Energy Employees Occupational Illness Compensation Program Act of 2000 was 11.757 rem to the lymphatic tissue.

For the purposes of this dose reconstruction, [redacted] radiation dose was estimated using claimant-favorable assumptions related to radiation exposure and intake, based on current science, documented experience, and relevant data. Even under these assumptions, NIOSH has determined that further research and analysis will not produce a level of radiation dose resulting in a probability of causation of 50% or greater. In accordance with 42 CFR § 82.10(k),[1] NIOSH has determined that sufficient research and analysis have been conducted to consider this dose reconstruction complete. The results of this dose reconstruction will be used by the Department of Labor to determine eligibility for compensation.

If the facts surrounding this dose reconstruction change (e.g., the date of diagnosis is modified, an additional covered cancer is diagnosed, or additional covered employment is identified), the measures used to reconstruct the dose may not be applicable.

Information Used

Specific parameters were applied to available site records in order to assign organ dose based on information in the External Dose Reconstruction Implementation Guideline[4] and the Internal Dose Reconstruction Implementation Guideline.[5] The modeled organs were selected based on

information in the Technical Information Bulletin: Internal Dosimetry Organ, External Dosimetry Organ, and IREP Model Selection by ICD-9 Code.[3] The primary source of information used for this dose reconstruction was the Technical Basis Document: Site Profiles for Atomic Weapons Employers that Refined Uranium and Thorium Metals, Appendix P, Baker-Perkins[6] prepared for the EEOICPA project.

In addition to the above information, the record of the computer assisted telephone interview was reviewed carefully by the dose reconstructor. The information provided was considered in the dose estimation process.

Dose Estimate

External Dose

External dose is received from radiation originating outside the body and is typically measured by dosimetry worn on the body. Radiation dose measured on a film badge or a thermoluminescent dosimeter (TLD) may have been delivered quickly (acute exposure) or slowly over the period of time that the employee was exposed (chronic exposure). Because there is no existing model that calculates external dose to the lymphatic tissue the external dose was determined by using the dose calculated for the thyroid.[3]

Radiation Type, Energy, and Exposure Conditions

From the records, it was not possible to state whether or not was in a position to be exposed to radioactive material. Thus, it was assumed that he was exposed to the source and involved directly with the mixing operations. The source was assumed to be natural uranium, with the most significant radiation for external exposure to the lymphatic tissue being photons with energies between 30 and 250 keV.

External Dose Summary

external dose was calculated using exposure parameters (Table 1 below) contained in Table P.3 of the technical basis document.[6] Values were input into IREP with a lognormal distribution in accordance with the technical basis document.[6] An exposure to organ dose conversion factor of 1.440 for the lymphatic tissue was applied in accordance with the External Dose Reconstruction Implementation Guideline.[4]

Table 1. External Dose

Year	External Whole Body (mR/d)	IREP Distribution
1956	1.28E+00	Lognormal/GSD 5

The total external dose assigned to the lymphatic tissue was 0.673 rem.

Occupational Medical Dose

One pre-employment and one post-employment diagnostic X-ray procedure may have been required as a condition of employment at Baker-Perkins for the performance of AEC work there. The term "pre-employment" means prior to the performance of AEC-contracted work, and the term "post-employment" means after the performance of AEC-contracted radiological work. was assigned one pre-employment and one post-employment X-ray exam

in accordance with the Technical Information Bulletin: Dose Reconstruction from Occupationally Related Diagnostic X-Ray Procedures.[7]

The total X-ray dose assigned to s 0.070 rem.

Internal Dose

Internal dose is caused by radioactive materials that are taken into the body. A chronic intake is an intake of radioactive material that occurs over an extended period of time (typically weeks or longer). An acute intake is an intake of radioactive material that occurs over a short period of time (typically minutes to hours). Regardless of the rate at which the intake occurs, the internal dose received from radioactive materials having long half-lives occurs over an extended period of time and is, therefore, considered chronic. Because there is no existing model that calculates internal dose to the lymphatic tissue the internal dose was determined by using the dose calculated for the thoracic lymph nodes.[3]

No dose monitoring records could be found for at Baker-Perkins Company. In accordance with the NIOSH Internal Dose Reconstruction Implementation Guideline[5], the IMBA program[8] was used to calculate the dose to the lymphatic tissue from exposure to both ingested and inhaled alpha radioactivity based on intake quantities (Table 2 below) provided in Table P.1 and Table P.2 of the technical basis document.[6] Solubility Type S was used as a claimant-favorable assumption for assigning dose.

Table 2. Internal Exposures

Nuclide	Start	End	Intake pCi/d		IREP Distribution
			Ingestion	Inhalation	
Uranium-234	1/1/1956	12/31/1956	2.94E-01	3.15E+01	Lognormal/ GSD 5.5

The total internal dose assigned to the lymphatic tissue was11.015 rem.

Dose from Radiological Incidents

The record of the telephone interview was evaluated carefully by the dose reconstructor. The interview process indicated that according to a newspaper article there had been an accident involving radioactive material. A search of the site research database did not reveal any evidence or documentation of a radiological accident at Baker-Perkins during the AEC work.

Uncertainty

Internal dose values were input into IREP as a lognormal distribution with a GSD of 5.5 and external dose values were input into IREP as a lognormal distribution with a GSD of 5 in accordance with the technical basis document.[6] Occupational medical X-ray dose values were input into IREP as a normal distribution with a 30% uncertainty in accordance with the technical basis document.[7]

Summary

was exposed to internal and external sources of radiation during his employment at Baker-Perkins Company resulting in a total dose to the lymphatic tissue of 11.757 rem . The reported dose is an estimate of _____ occupational radiation dose which will support claim determination. The attachment contains the dose reconstruction summary sheet that will be used by the Department of Labor to make the final probability of causation determination of the claim.

References

1. 42 CFR 82, *Methods for Radiation Dose Reconstruction Under the Energy Employees Occupational Illness Compensation Program Act of 2000*; Final Rule, Federal Register/Vol.67, No. 85/Thursday, May 2, 2002, p 22314.

2. 42 CFR 81, *Guidelines for Determining the Probability of Causation Under the Energy Employees Occupational Illness Compensation Program Act of 2000*; Final Rule, Federal Register/Vol.67, No. 85/Thursday, May 2, 2002, p 22296.

3. ORAUT (Oak Ridge Associated Universities Team), ORAUT-OTIB-0005, *Technical Information Bulletin: Internal Dosimetry Organ, External Dosimetry Organ, and IREP Model Selection by ICD-9 Code, Rev 02 PC-1*, February 10, 2006.

4. NIOSH, (2006) *External Dose Reconstruction Implementation Guideline, Rev 2*, OCAS-IG-001, National Institute for Occupational Safety and Health, Office of Compensation Analysis and Support, Cincinnati, Ohio.

5. NIOSH, (2002) *Internal Dose Reconstruction Implementation Guideline, Rev 0*, OCAS-IG-002, National Institute for Occupational Safety and Health, Office of Compensation Analysis and Support, Cincinnati, Ohio.

6. Battelle, Battelle-TBD-6001, *Site Profile for Atomic Weapons Employers that Refined Uranium and Thorium, Rev 0*, June 15, 2007, *Appendix P- Baker-Perkins, Rev 0,* September 14, 2007.

7. ORAUT (Oak Ridge Associated Universities Team), ORAUT-OTIB-0006, *Technical Information Bulletin: Dose Reconstruction from Occupationally Related Diagnostic X-Ray Procedures, Rev 03 PC-1,* December 21, 2005.

8. ACJ Associates, Inc., (2004), *User Manual for IMBA Expert, OCAS-Edition*, ACJ Associates, Richland, Washington.

9. SENES Oak Ridge, Inc. (2003), *User's Guide for the Interactive RadioEpidemiological Program (NIOSH-IREP)*, January 15.

CLAIMANT CANCER DIAGNOSES

	Primary Cancer #1	Primary Cancer #2	Primary Cancer #3	Secondary Cancer #1	Secondary Cancer #2	Secondary Cancer #3
Cancer Type	Histiocytic lymphoma	N/A	N/A	N/A	N/A	N/A
Date of Diagnosis	1980	N/A	N/A	N/A	N/A	N/A

EXPOSURE INFORMATION

Number of exposures: 28

Exposure #	Exposure Year	Exposure Rate	Radiation Type	Dose Distribution Type	Parameter 1	Parameter 2	Parameter 3
1	1956	chronic	alpha	Lognormal	0.091	5.500	0.000
2	1957	chronic	alpha	Lognormal	0.300	5.500	0.000
3	1958	chronic	alpha	Lognormal	0.354	5.500	0.000
4	1959	chronic	alpha	Lognormal	0.385	5.500	0.000
5	1960	chronic	alpha	Lognormal	0.412	5.500	0.000
6	1961	chronic	alpha	Lognormal	0.433	5.500	0.000
7	1962	chronic	alpha	Lognormal	0.452	5.500	0.000
8	1963	chronic	alpha	Lognormal	0.467	5.500	0.000
9	1964	chronic	alpha	Lognormal	0.480	5.500	0.000
10	1965	chronic	alpha	Lognormal	0.488	5.500	0.000
11	1966	chronic	alpha	Lognormal	0.495	5.500	0.000
12	1967	chronic	alpha	Lognormal	0.500	5.500	0.000
13	1968	chronic	alpha	Lognormal	0.505	5.500	0.000
14	1969	chronic	alpha	Lognormal	0.505	5.500	0.000
15	1970	chronic	alpha	Lognormal	0.504	5.500	0.000
16	1971	chronic	alpha	Lognormal	0.503	5.500	0.000
17	1972	chronic	alpha	Lognormal	0.501	5.500	0.000
18	1973	chronic	alpha	Lognormal	0.496	5.500	0.000
19	1974	chronic	alpha	Lognormal	0.491	5.500	0.000
20	1975	chronic	alpha	Lognormal	0.486	5.500	0.000
21	1976	chronic	alpha	Lognormal	0.480	5.500	0.000
22	1977	chronic	alpha	Lognormal	0.472	5.500	0.000
23	1978	chronic	alpha	Lognormal	0.465	5.500	0.000
24	1979	chronic	alpha	Lognormal	0.457	5.500	0.000
25	1980	chronic	alpha	Lognormal	0.293	5.500	0.000
26	1956	chronic	hotons E=30-250ke	Lognormal	0.673	5.000	0.000
27	1956	acute	hotons E=30-250ke	Normal	0.035	0.010	0.000
28	1956	acute	hotons E=30-250ke	Normal	0.035	0.010	0.000

OTHER ADVANCED FEATURES

Sample Size	Random Seed
2000	99

User Defined Uncertainty Distribution

Dose Distribution Type	Parameter 1	Parameter 2	Parameter 3
Lognormal	1.000	1.000	0.000

ATTACHMENT F

Form OCAS-1
August 2001

OMB No. 0920-0530
Exp. Date 5/31/05

Statement by the Claimant Closing the Record on a NIOSH Dose Reconstruction under the Energy Employees Occupational Illness Compensation Program Act

I, #6, a claimant under the Energy Employees Occupational Illness Compensation Program Act (EEOICPA), certify that I have completed providing information to the National Institute for Occupational Safety and Health (NIOSH) and its representatives information relating to potential radiation doses incurred by #6 while under the employment of DOE, a DOE contractor, or an Atomic Weapons Employer. In signing this form, I also certify that I have read, understand, and agree with the following statements:

a) I am not aware of any additional information available to me that may be relevant to NIOSH in completing a dose reconstruction to estimate the radiation doses incurred by the employee as specified above; and,

b) I have reviewed the draft NIOSH dose reconstruction report and agree that it identifies all of the relevant information I provided to NIOSH to complete the dose reconstruction; and,

c) NIOSH should forward a final dose reconstruction report to the Department of Labor (DOL), so that DOL can continue adjudication of my claim and produce a recommended decision to accept or reject my claim; and,

d) I understand that my opportunity to seek a review of the NIOSH dose reconstruction occurs only if DOL were to produce a recommended decision to deny my claim; and,

e) By signing this form, I do NOT certify or imply that I agree with NIOSH decisions indicated in the draft NIOSH dose reconstruction report concerning how NIOSH has used or not used information I have provided for the dose reconstruction; and,

f) By signing this form, I do NOT certify or imply that I agree with the findings of the NIOSH dose reconstruction.

2005 JUN -7 AM 11:23

Notice: Any person who knowingly makes any false statement, misrepresentation, concealment of fact or any other act of fraud to obtain compensation as provided under EEOICPA or who knowingly accepts compensation to which that person is not entitled is subject to civil or administrative remedies as well as felony criminal prosecution and may, under appropriate criminal provisions, be punished by a fine or imprisonment or both. I affirm that the information provided on this form is accurate and true.

Signature #6 June 3/05

NIOSH ID: 8904

Covered Employee #6 | NIOSH ID# LOW2 | Social Security # #6

Introduction

The Energy Employees Occupational Illness Compensation Program Act of 2000 (EEOICPA), Executive Order No. 13179 and the Radiation Dose Reconstruction Rule (42 CFR 82)[1]

EEOICPA established a compensation program to provide a lump sum payment of $150,000 and medical benefits as compensation to covered employees suffering from designated illnesses incurred as a result of their exposure to ionizing radiation, beryllium, or silica while in the performance of duty for the Department of Energy and certain of its vendors, contractors, and subcontractors. This legislation also provided for payment of compensation to certain survivors of these covered employees.

In Presidential Executive Order No. 13179, the President designated the U.S. Department of Labor to administer this program for claims by current and former employees of nuclear weapons production facilities and their survivors who seek compensation for cancers caused by radiation exposures sustained in the performance of duty. The Executive Order also directed the Department of Health and Human Services to estimate (reconstruct) the radiation doses received by these employees. The Department of Labor uses the reconstructed radiation dose in evaluating whether the employee's cancer was at least as likely as not related to employment at the facilities covered by EEOICPA. To fulfill the responsibilities assigned to the Department of Health and Human Services, the National Institute for Occupational Safety and Health's (NIOSH) Office of Compensation Analysis and Support (OCAS) completes dose reconstructions using the methods described in the Radiation Dose Reconstruction Rule (42 CFR 82)[1] for the Department of Labor's use in making compensation decisions.

The Purpose of Radiation Dose Reconstruction

A radiation dose reconstruction is used to estimate the radiation dose received by the specific organ(s) in which a worker developed cancer, particularly when radiation monitoring data are unavailable, incomplete, or of poor quality. Even in instances when radiation dosimetry data are available, they rarely specify dose to an organ and often are based on monitoring procedures that do not meet modern standards.

The basic principle of dose reconstruction is to characterize the occupational radiation environment to which a worker was exposed using available worker and/or workplace monitoring information. In cases where radiation exposures in the workplace environment cannot be fully characterized based on available data, default values based on reasonable scientific assumptions are used as substitutes.

EEOICPA recognized that the process of estimating radiation doses would require dealing with uncertainties and limited data and thus required that the government establish methods for arriving at reasonable estimates of radiation dose received by an individual who was not monitored or inadequately monitored for exposures to radiation, or for whom exposure records are missing or incomplete. To the extent that the science and data involve uncertainties, these uncertainties are typically handled to the advantage, rather than to the detriment, of the claimant. NIOSH has used the best available science to develop the methods and guidelines for dose

Covered Employee #6 | NIOSH ID# LOW 2 | Social Security # #6

reconstruction. These methods have been revie d and commented upon by the public, including experts in the field of dose reconstruction, and the Presidentially-appointed Advisory Board on Radiation and Worker Health.

How Radiation Doses Are Reconstructed

NIOSH reconstructs radiation doses by evaluating all available, appropriate data relevant to the employee's radiation exposure. Some examples of data that may be included in the dose reconstruction include, but are not limited to, internal dosimetry (such as results from urinalysis), external dosimetry data (such as film badge readings), workplace monitoring data (such as air sample results), workplace characterization data (such as type and amount of radioactive material processed), and descriptions of the type of work performed at the work location.

Although the specific methods used for each dose reconstruction may vary, after a claim has been referred by the Department of Labor to NIOSH for a dose reconstruction, NIOSH typically requests the worker's personal radiation monitoring information from the Department of Energy. Upon receipt of the requested information, at least one voluntary informational interview with the claimant and/or survivors is conducted and a copy of the interview report is sent for review. After all of the necessary and available information is gathered, a dose is estimated, using the methods in the Radiation Dose Reconstruction Rule. After a NIOSH health physicist reviews the information, methods, and results, the claimant receives a draft copy of the dose reconstruction report followed by a concluding interview, during which the claimant can add any additional relevant information that may affect the dose reconstruction. If the claimant certifies that he/she has completed providing information and that the record for dose reconstruction should be closed, a final dose reconstruction report is sent to the claimant, the Department of Labor, and the Department of Energy.

As applied in the EEOICPA, dose reconstructions must rely on information that can be developed on a timely basis and on carefully stated assumptions. Therefore, the guiding principle in conducting these dose reconstructions is to ensure that the assumptions used are fair, consistent, and well-grounded in the best available science, while ensuring that uncertainties in the science and data are handled to the advantage, rather than to the detriment, of the claim when feasible. When dose information is not available, is very limited, or the dose of record is very low, NIOSH may use the highest reasonably possible radiation dose, based on reliable science, documented experience, and relevant data, to complete a claimant's dose reconstruction. In other instances, NIOSH may not need to complete fully a dose reconstruction because a partial dose reconstruction results in an estimated dose which produces a probability of causation of 50% or greater.

How Radiation Dose Reconstructions Are Used in Final Compensation Determinations

The results of an employee's dose reconstruction are used by the Department of Labor to determine the probability that a worker's cancer was "at least as likely as not" due to his/her occupational exposure to ionizing radiation during employment at a covered facility. Criteria and guidelines for making this determination are established by EEOICPA and the Probability of Causation Guidelines (42 CFR 81).[2] The dose reconstruction is not the final determination of a claim, but rather an interim product that is used by the Department of Labor in making its final

Covered Employee	NIOSH ID#	Social Security #
#6	6012	#6

decision. Final determinations are made by the Department of Labor based on standards determined by EEOICPA and its implementing regulations.

Dose Reconstruction Overview

The Office of Compensation Analysis and Support has performed a dose reconstruction for #6 in accordance with the applicable requirements of the Energy Employees Occupational Illness Compensation Program Act. The Department of Labor (DOL) has verified that #6 worked at Baker-Perkins from April 1, 1954, through September 24, 1964. It was also verified that #6 was diagnosed with lung cancer in 1964. Documentation indicates that during this period, he was employed as a maintenance man and janitor. No dosimetry or bioassay records could be found for #6 related to work by Baker-Perkins for the Atomic Energy Commission (AEC, one of the predecessor agencies of the present Department of Energy).

Baker-Perkins performed work for the AEC during 1956. Based on guidance in the Technical Information Bulletin: IMBA Organ, External Dosimetry Organ, and IREP Model Selection by ICD-9 Code,[3] dose to the lung was evaluated for potential exposure starting in 1956 until the time of cancer diagnosis in 1964.

Based on the type of information in #6 records and the general site information gathered for Baker-Perkins, NIOSH was unable to specifically determine the radiation exposure conditions for #6 case. In cases where this occurs, the final rule describing the methods for dose reconstruction (42 C.F.R. pt. 82)[1] allows NIOSH to assume exposure conditions that maximize the dose to the organ where the cancer originated. In order to complete this dose reconstruction, NIOSH has used this large dose estimate. Information obtained through additional research would not result in a higher internal dose to the organ where the cancer originated, and may in fact lower the calculated dose to this organ.

It was determined that the internal dose due to one year of inhalation alone was of sufficient magnitude to produce a probability of causation of 50% or greater. Thus, the cumulative lung dose reported excludes the internal dose due to ingestion, and excludes the external doses due to uranium metal, residual radioactivity, and the assumed annual diagnostic X-ray procedure. Based on this efficiency process, the estimated dose to the lung was 1047.385 rem from internal exposure. In accordance with the provisions of 42 CFR 82.10(k),[1] NIOSH has determined that sufficient research and analysis have been conducted to consider this reconstruction complete.

Information Used

Organ dose calculations are based on information in the Internal Dose Reconstruction Implementation Guideline.[4] The primary data source utilized for this dose reconstruction was the Technical Basis Document: Technical Basis for Estimating the Maximum Plausible Dose to Workers at Atomic Weapons Employer Facilities,[5] prepared for the EEOICPA project. It presents the evaluation of information regarding the uranium handling work performed by various atomic weapons employer (AWE) facilities for the AEC. Conservative (claimant-favorable) values of breathable air concentrations, inhalation times, and uranium enrichment

levels were assumed in order to estimate doses these workers. The type of cancer and the date of diagnosis were obtained from the medical records submitted by the claimant.

The methodology described in the technical basis document[5] is considered applicable to this dose reconstruction because the derived doses are based on assumed exposure to natural uranium metal only. If the doses due to any additional source terms not considered in the technical basis document were added to this dose reconstruction, the estimated dose would increase. Consideration of the dose due to any additional dose contributors is not necessary for claim determination purposes.

For lung cancer claims, smoking history is necessary to determine the probability of causation. The covered employee's smoking history was categorized as "never smoked" at the time of cancer diagnosis by the NIOSH Referral Summary.

In addition to the above information, the record of the computer assisted telephone interview was reviewed carefully by the dose reconstructor. The information provided was considered in the dose estimation process.

Dose Estimate

External Dose

Per the provisions in 42 CFR § 82.10(k)(1),[1] it was determined that the estimation of internal dose alone was sufficient to consider the dose reconstruction complete. Because of this, #6 external dose was not reconstructed.

Occupational Medical Dose

Per the provisions in 42 CFR § 82.10(k)(1),[1] it was determined that an estimation of occupational medical dose from required X-ray examinations was not necessary in order to complete this dose reconstruction. Because of this, #6 potential occupational medical dose was not reconstructed.

Internal Dose

Internal dose is received from radiation originating inside the body (i.e., from radioactive material taken into the body in some way). It can be calculated based on bioassay measurements of individual workers or on measurements of radiological conditions in the workplace. No dose monitoring records could be found for #6 at Baker-Perkins. Thus, source term estimates were used to produce an assumed source term for internal dose calculations.[5]

Radiation Type, Energy, and Exposure Conditions

From the records, it was not possible to state whether or not #6 was in a position to be exposed to radioactive material. Thus, it was assumed that he was exposed chronically to the source: the uranium metal handled during operations. The source was uranium metal and the most significant radiation for internal exposure was alpha radiation.

The assumption was made that the source was taken into the body by inhalation during uranium handling operations. These operations were assumed to occur daily, resulting in a chronic intake

of uranium. For inhalation intakes and subseq determination of dose to the respiratory tract, uranium metal dust is considered to be an insoluble (i.e., Absorption Type S) material. Uranium was assumed to be uranium-234 for internal dose assessment purposes. These are claimant-favorable assumptions.

The estimated uranium inhalation rate was 8.1E+06 pCi/year (22192 pCi/day) during the period of time that the AEC work was ongoing.[5] This value was used in a computer code, the Integrated Modules for Bioassay Analysis (IMBA), to calculate annual internal lung doses for determination of probability of causation. The IMBA-EXPERT program was used for this dose reconstruction. The ICRP 66 lung model with default aerosol characteristics was assumed, in conjunction with ICRP 68 metabolic models.[5] Table 1 shows the intake scenario used to determine the annual lung dose due to inhalation. It was only necessary to consider #6 first year of covered employment to complete this dose reconstruction.

Table 1. Intake scenario used to determine annual doses from inhalation

Intake Period	Inhalation Intake Rate (pCi/day)
January 1, 1956 – December 31, 1956	22192

The total lung dose was determined to be 1047.385 rem.

Dose from Radiological Incidents

Per the provisions in 42 CFR § 82.10(k)(1),[1] it was determined that an estimation of any potential unrecorded dose from radiological incidents was not necessary in order to consider the dose reconstruction complete. Because of this, no attempt has been made to reconstruct potential dose from radiological incidents.

Summary

#6 was assumed to have been exposed internally during his covered employment at Baker-Perkins to an amount of radiation sufficient to result in a dose of 1047.385 rem to the lung. Per 42 C.F.R. pt. 82,[1] NIOSH has assumed exposure conditions that maximize the dose to the organ where the cancer originated. Information obtained through additional research would not result in a higher dose to the organ where the cancer originated, and may in fact lower the calculated dose to this organ. To expedite this claim, only the internal dose due to one year of inhalation has been included in this dose reconstruction. The reported dose is a reasonable estimate of #6 occupational radiation dose for claim determination purposes.

Attachment 1 contains the IREP dose reconstruction summary sheet that will be used by the Department of Labor to make the final probability of causation determination of the claim.

Covered Employee #6 | NIOSH ID# LOW2 | Social Security # #6

References

1. 42 CFR § 82, *Methods for Radiation Dose Reconstruction Under the Energy Employees Occupational Illness Compensation Program Act of 2000*; Final Rule, Federal Register/Vol.67, No. 85/Thursday, May 2, 2002, p 22314.

2. 42 CFR § 81, *Guidelines for Determining the Probability of Causation Under the Energy Employees Occupational Illness Compensation Program Act of 2000*; Final Rule, Federal Register/Vol.67, No. 85/Thursday, May 2, 2002, p 22296.

3. ORAUT (Oak Ridge Associated Universities Team), ORAUT-OTIB-0005, *Technical Information Bulletin: IMBA Organ, External Dosimetry Organ, and IREP Model Selection by ICD-9 Code, Rev 01 PC-3*, October 29, 2004.

4. NIOSH, (2002) *Internal Dose Reconstruction Implementation Guideline, Rev 0*, OCAS-IG-002, National Institute for Occupational Safety and Health, Office of Compensation Analysis and Support, Cincinnati, Ohio.

5. ORAUT (Oak Ridge Associated Universities Team), ORAUT-OTIB-0004, *Technical Information Bulletin: Technical Basis for Estimating the Maximum Plausible Dose to Workers at Atomic Weapons Employer Facilities, Rev 02*, December 4, 2003.

NIOSH-Interactive RadioEpidemiological Program
Probability of Ca ıtion Results

Date of Run: 5/23/2005
Time of Run: 3:01:45 PM
NIOSH ID #:
Claimant Name: #6

DOL District Office: CL
NIOSH-IREP version: 5.4
Analytica/ADE version: 3.0
Claimant SSN: #6

Claimant Cancer Diagnoses:

Primary Cancer #1: Lung — Date of Diagnosis: 04/14/1964
Primary Cancer #2: N/A — Date of Diagnosis: N/A
Primary Cancer #3: N/A — Date of Diagnosis: N/A
Secondary Cancer #1: N/A — Date of Diagnosis: N/A
Secondary Cancer #2: N/A — Date of Diagnosis: N/A
Secondary Cancer #3: N/A — Date of Diagnosis: N/A

Claimant Information Used In Probability of Causation Calculation:

Gender: Male
Birth Year: 1910
Cancer Model: Lung (162)
Smoking history (trachea, bronchus, or lung cancer only): Never smoked
Race (skin cancer only): N/A
Year of Diagnosis: 1964
Should alternate cancer model be run?: No

NIOSH-IREP Assumptions and Settings:

User Defined Uncertainty Distribution: Lognormal(1,1)
Number of Iterations: 2000
Random Number Seed: 99

General Exposure Information:

Exposure #	Exposure Year	Organ Dose (cSv)	Exposure Rate	Radiation Type
1	1956	Constant =564.8	chronic	alpha
2	1957	Constant =180.3	chronic	alpha
3	1958	Constant =90.94	chronic	alpha
4	1959	Constant =66.06	chronic	alpha
5	1960	Constant =49.25	chronic	alpha
6	1961	Constant =37.42	chronic	alpha
7	1962	Constant =29.26	chronic	alpha
8	1963	Constant =23.48	chronic	alpha
9	1964	Constant =5.875	chronic	alpha

Radon Exposure Information:

N/A (applies only to cases of Lung Cancer with Radon Exposures)

Results of NIOSH-IREP

Probability of Causation:

1st percentile	4.07 %
5th percentile	11.89 %
50th percentile	57.24 %
95th percentile	91.53 %
99th percentile	96.16 %

To perform another calculation, please logout and close your browser: End Session

To calculate PC from multiple primary cancers, click here: Multiple Primary

ATTACHMENT G

NIOSH Program Area:

Office of Compensation Analysis and Support (OCAS)

Claim Information--Main Page

Part B - NIOSH Dose Reconstruction Referrals from the Department of Labor (DOL)

Energy Employees Occupational Illness Compensation Program Act (EEOICPA) - By State and/or Site

modified 8/26/2008

Michigan Baker-Perkins Co.

Cases Referred to NIOSH by DOL	**8**
Cases Currently Returned to DOL (100%)	
~cases returned with a completed final dose reconstruction report	8
~cases pulled from NIOSH and dose reconstruction by DOL[1]	0
~cases pulled from NIOSH and dose reconstruction for SEC[2]	0
	8
Cases Currently Administratively Closed by NIOSH (0%)[3]	**0**
Cases Currently at NIOSH (0%)	
~cases assigned to Health Physicists for dose reconstruction	0
~cases with a completed draft dose reconstruction; awaiting OCAS-1	0
~cases not yet assigned to Health Physicists for dose reconstruction	0
	0[4]

Overall Program Statistics

[1] DOL pulled (withdrew) case from NIOSH and dose reconstruction due to claimant request, claimant death without a known survivor, or insufficient employment or medical information

[2] NIOSH pulled case from dose reconstruction and returned it to DOL for Special Exposure Cohort (SEC) consideration

[3] Draft dose reconstruction report completed Administratively closed due to claimant refusal to sign OCAS-1 form.

[4] Of the total active claims at NIOSH, 0 out of 0 (0%), represent dose reconstructions returned to NIOSH by DOL for rework due to additional employment, an additional cancer needs to be dose reconstructed, or the affect of a technical change based on a Program Evaluation Report is being examined

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Page last modified: August 26, 2008
Page last reviewed: May 30, 2008
Content Source. National Institute for Occupational Safety and Health (NIOSH)

Find It !

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- FAQs
- General Activities on AWE Cases
- General Activities on DOE Cases
- Help A-Z
- List of Work Sites
- Phone Interview Information
- OCAS Print Materials
- Status of Your Dose Reconstruction

OCAS Directory
- About OCAS
- The Act (EEOICPA)
- Advisory Board
- Conflict or Bias Policy and Disclosure Statements
- Dose Reconstruction
- Help A-Z
- Latest Update to OCAS Web Site
- Probability of Causation (NIOSH-IREP)
- Public Meetings
- Program Evaluation Reports (PERs) and Program Evaluation Plans (PEPs)
- Regulatory Record (Public Docket)
- Related Links
- Special Exposure Cohort
- Technical Documents Used in Dose Reconstruction
- Timeline of Major OCAS Events
- OCAS Main Page

October 31, 2005

Summary of NIOSH's Re-examination of Lymphoma Target Organ Selection

Current NIOSH practice for the selection of target organs involving lymphomas is to obtain a medical review by a physician to determine the site of origin. In the past, these reviews have relied on the listed biopsy location to identify the appropriate target organ. The result of this determination has frequently been to use the highest non-metabolic organ[1] as the internal dose target organ, and to use a nearby organ as a surrogate for the external target organ. NIOSH has re-examined the appropriateness of this strategy of target organ selection, in light of the current scientific literature on the diagnosis and etiology of the various forms of lymphoma. To assist in its review, NIOSH sought the expert advice of Dr. Mark Crowther, Associate Professor of Medicine at McMaster University in Hamilton, Ontario. Dr. Crowther has board-certifications in internal medicine and hematology.

This re-examination has revealed that, for many non-Hodgkin's lymphomas, there are two issues with NIOSH's method of selecting target tissues for organ-specific radiation dose reconstruction. First, the site of occurrence of the tumor is not necessarily the site of the original radiation injury. Non-Hodgkin's lymphoma is a disease involving malignant lymphocytes. Unlike the case for most primary solid tumors, where the tumor results from the interaction of radiation with immobile cells, radiation could have interacted with these lymphocytes anywhere in the lymphatic or circulatory system, and then formed a tumor elsewhere. The second issue is that the site listed in the diagnosis may not actually be the site of primary involvement. Rather, it is common to list the site of the biopsy, which is selected based primarily on convenience, that is, as indicated by clinical symptoms and ease of diagnostic access.

Because the site of origin of non-Hodgkin's lymphomas can not be determined with any confidence, NIOSH proposes to modify the selection of target organs so that the dose to the highest plausible organ is used in the dose reconstruction. For internal dose, the thoracic lymph nodes associated with the lungs will be selected because the dose to this tissue from exposure via inhalation of insoluble radioactive material is always higher than the dose to other organs. For external dose, the lungs will be selected for B-cell lymphomas as the target organ because a significant fraction of the total lymphoid organ mass occurs in the thoracic cavity. For T-cell lymphomas, the thymus will be selected.

For the subset of lymphomas, where tumor location is informative about the probable site of original radiation injury (e.g. Hodgkin's disease, lymphosarcoma, etc.), the information related to the site of diagnosis will be considered in target organ selection.

This guidance pertains only to the selection of appropriate target organ as the site of radiation injury (i.e., for calculation of effective radiation dose during the dose reconstruction process). It has no bearing on the selection of the appropriate IREP cancer risk model, nor does it impact the risk models themselves.

Following a number of telephone and email consultations with Dr. Crowther, NIOSH prepared revision 0 of OCAS-TIB-012: *Selection of internal and external dosimetry target organs for lymphatic/hematopoietic cancers.* This technical information bulletin reviewed the current NIOSH procedure regarding the target organ selection for lymphatic/hematopoietic cancers, as specified

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[1] In this context, the highest non-metabolic organ refers to the organ with the highest internal dose that is not explicitly described as concentrating the radionuclide under investigation. In current ICRP model terminology, it is equivalent to the highest dose assigned to "other soft tissues."

in ORAUT-OTIB-005: *IMBA organ, external dosimetry organ, and IREP model selection by ICD-9 code.*

Prior to the release of this procedure, however, OCAS-TIB-012 was then subjected to further review by Dr. Keith Eckerman of Oak Ridge National Laboratory (ORNL). Dr. Eckerman, a recognized expert in internal dosimetry and a member of the International Commission on Radiological Protection (ICRP), provided several suggestions, the most significant of which was to select the thoracic lymph nodes [LN(TH)], rather than the extrathoracic lymph nodes [LN(ET)], for internal target organs in situations where the site of original radiation injury is unknown. Dr. Eckerman's proposal, as noted in his attached review, was based on the fact that it is a plausible choice and that it is also claimant-favorable, as doses to LN(TH) are typically higher than doses to LN(ET). This suggestion was incorporated into revision 1 of OCAS-TIB-012.

Concurrent with preparation of OCAS-TIB-012, NIOSH initiated a review to identify completed lymphoma dose-reconstructions with a probability of causation <50% at the upper 99th percentile credibility limit which may be affected by the revised organ selection guidance. Approximately 500 cases requiring re-examination have been identified. Further action on this re-examination, as well as implementation of OCAS-TIB-012 for the several hundred currently uncompleted cases, has been suspended pending review by the Advisory Board on Radiation Worker Health, as requested by the Board at its meeting on October 19, 2005. To facilitate the Board's review, the three documents relevant to this issue: 1) Draft OCAS-TIB-012 rev. 1; 2) report on target organ selection from Dr. Mark Crowther; and, 3) review of OCAS-TIB-012 rev. 1 by Dr. Keith Eckerman, are attached.

October 31, 2005

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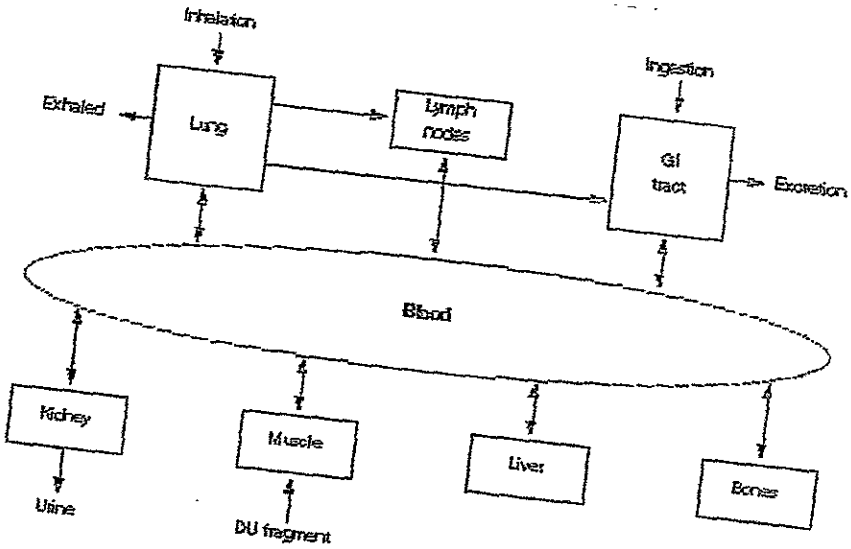
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Excretion
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