

Attachment 14 –
Attachment 5 of Pamela Sihvola and LA Wood Letter June 7, 2005

Superfund Technical Assessment and Response Team

**Federal Facility PA/SI Re-evaluation
Lawrence Berkeley National Laboratory
Berkeley, California**

EPA ID #: CA4890008986
START#: 099801-004
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Submitted to:

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Contract No. 68-W6-0010

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Date:

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1.

Introduction

The United States Environmental Protection Agency (EPA), Region 9, under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), has tasked Ecology and Environment, Inc.'s, (E & E's) Superfund Technical Assessment and Response Team (START) to conduct a preliminary assessment (PA)/site inspection (SI) re-evaluation for the Lawrence Berkeley National Laboratory (LBL) site in Berkeley, Alameda County, California. The PA/SI re-evaluation will focus on LBL's National Tritium Labeling Facility (NTLF).

LBL was identified as a potential hazardous waste site and entered into the CERCLA Information System (CERCLIS) in May 1988 (EPA ID# CA4890008986). In 1991, E & E's Field Investigation Team reviewed the PA/SI submitted by the Department of Energy (DOE) for LBL. The purpose of that review was to evaluate existing information on the site and its environs to assess the threat(s), if any, posed to public health, welfare, or the environment and to determine if further investigation under CERCLA/SARA was warranted. After reviewing the PA/SI, EPA decided that no further remedial site assessment was required under CERCLA/SARA (3).

On February 3, 1997, the Committee to Minimize Toxic Waste (CMTW) requested that EPA reassess the need for further remedial site assessment under CERCLA/SARA at LBL based on additional data regarding tritium contamination in soil water, plant-transpired water, rainwater (precipitation), and organically bound tritium in plants (1). EPA tasked E & E's START to review the data submitted by the CMTW and additional data obtained from DOE, and to re-evaluate the site using EPA's Hazard Ranking System (HRS) criteria. The HRS assesses the relative threat associated with the actual or potential releases of hazardous substances from the site. The HRS is the primary method of determining a site's eligibility for placement on

EPA's National Priorities List (NPL). The NPL identifies sites at which EPA may conduct remedial response actions. This report is the result of E & E's evaluation of the submitted data.

1.1 Apparent Problem

Residual tritium from the labeling activities conducted at NTLF are released through the NTLF stack as gaseous tritium and tritiated water vapor, which disperse from the stack and settle to the ground. Ambient air samples collected on and off the LBL site have contained tritium in concentrations that exceed EPA's cancer risk screening concentration (see Tables 3-1 and 3-2). Tritium also has migrated to groundwater, surface water, soil, and soil water both within LBL boundaries and off site (2).

In a letter to EPA, the CMTW requested that EPA re-evaluate its previous CERCLA evaluation of the LBL with particular emphasis on radioactive tritium emissions and contamination. The CMTW's request for re-evaluation was based on the following data and assumptions:

- Analytical data from several media, including soil water, plant-transpired water, rainwater, and organically bound in plants
- Consideration of the NTLF emissions as continuous rather than historic releases
- Public access to contaminated areas
- Use of groundwater for drinking water
- Exposure to tritium-contaminated rainwater
- Organically bound tritium in the food chain
- Tritium in water from hydroaugers
- Tritium in trees marked for removal

Specific responses to these items are provided below. Where appropriate, these factors have been included in Sections 3 and 4 of this report.

Consideration of the NTLF emissions as continuous rather than historic releases—Emissions data discussed in sections 3.1.5 and 4.4.3 of this report include data gathered as recently as December 1997.

Public access to contaminated areas—The Soil Exposure Pathway evaluation in this report recognizes that the eucalyptus grove between the Lawrence Hall of Science (LHS) and LBL is used for public recreation.

Groundwater as a source of drinking water—The HRS evaluates only specific groundwater uses associated with human demands, i.e., human drinking water supply, irrigation of commercial food or forage crops (5-acre minimum), commercial livestock watering, an ingredient in commercial food preparation, commercial aquaculture supply, or supply for a major or designated water recreation area (excluding drinking water). In addition, the HRS Groundwater Pathway only evaluates releases and targets associated with aquifers, which are defined in EPA's HRS Guidance Manual (November 1992) as "rock or sediment that is saturated and sufficiently permeable to yield economically significant quantities of water to wells or springs." Soil water within 2 feet of the ground surface can be evaluated as a source of contamination for the HRS Soil Exposure Pathway (see Section 4.4.3, Soil Exposure and Air Pathway Conclusions).

Tritium-contaminated rainwater—Under the HRS, the ambient air samples collected by LBL are sufficient to document the release and migration of tritium to air. EPA uses ambient air samples, not rainwater samples, to document a release to air in the HRS. In addition, there are no HRS-appropriate background concentrations or benchmarks to which the values can be compared; therefore, the ambient air samples, not the rain water samples, are discussed in Section 4.4.3, Soil and Air Pathway Conclusions.

Organically bound tritium in the terrestrial food chain—While organically bound tritium in plants demonstrates the migration of tritium beyond the NTLF stack, there is no mechanism in the HRS for evaluating the migration of tritium to these plants or the potential

release of tritium from these plants to humans or other animals. The preamble to the HRS final rule, published in the December 14, 1990, *Federal Register* (55 FR 51557), states that the terrestrial food chain is too complex and site-specific and requires considerably more data than is possible in a screening system such as the HRS. Terrestrial food chain factors are, however, evaluated indirectly as resources under each of the four HRS pathways.

Hydrauger releases—Section 4.3.3, Surface Water Pathway Conclusions, addresses the tritium contamination in water collected by the hydraugers as part of the Surface Water Pathway. The storm drain system is not considered a containment for the hydrauger water, but rather a pathway for release into the creeks draining LBL.

Tritium in trees marked for removal—Although the potential exposure of Korean paper mill workers to tritium in the eucalyptus trees that are removed from LBL is a valid concern, the HRS evaluates releases or potential releases to the environment, which is defined in CERCLA Section 101 (8) as surface water, groundwater, drinking water supply, land surface or subsurface strata, or ambient air within the United States or under the jurisdiction of the United States.

During the re-evaluation of LBL, the CMTW provided EPA additional data and requested that they be reviewed and included in the re-evaluation (30,31). All of the data received by EPA were reviewed as part of this re-evaluation. Where appropriate, the data have been included in Sections 3 or 4 of this report.

Table 3-1						
Summary of 1995 and 1996 Ambient Air Sampling for Tritium						
Station ID	1995			1996		
	No. of Samples Reported ¹	No. of Samples Exceeding 3 Times Background	No. of Samples Exceeding CRSC ²	No. of Samples Reported ^{1,3}	No. of Samples Exceeding 3 Times Background	No. of Samples Exceeding CRSC ²
ENV-3	13	7	7	NS		
ENV-69 ⁴	22	19	19	11	9	8
ENV-13A	24	12	11	10	3	2
ENV-13B	19	8	7	NS		
ENV-13C	25	11	10	10	3	1
ENV-13D	18	9	8	NS		
ENV-LHS	23	12	10	10	3	2
ENV-MRI	17	9	9	NS		

Key:

- 1 Results were not reported if data did not meet quality assurance standards. Excess moisture in the sample prevented the concentrations in some samples from being adequately quantified.
 - 2 Cancer-Risk Screening Concentration (CRSC) for tritium in air is 50 pCi/m³.
 - 3 The sampling frequency changed from weekly to monthly in August and September 1995, so fewer samples were collected in 1996.
 - 4 Station 69A was replaced with Station 69 in October 1996.
- NS Station was not part of monitoring network in 1996.

DAILY CALIFORNIAN

THE DAILY CALIFORNIAN • FRIDAY, AUGUST 7, 1998

EPA Finds Lab Tritium Levels Need Cleanup

■ Report claims emissions safe, activists disagree

By Charlotte Ley
Contributing Writer

After an extensive 18-month review of the Lawrence Berkeley National Laboratory's tritium facilities, the U.S. Environmental Protection Agency has concluded that the site is eligible to be on a national list of uncontrolled or abandoned hazardous waste sites nationwide.

The EPA determined that although the lab's National Tritium Labeling Facilities were well below the agency's clean air public health standards, it was qualified for the National Priorities List because its tritium levels sometimes exceed the screening criteria used in the Hazard Ranking System for ranking potential National Priorities List sites, according to the EPA's report.

Formally known as the NPL, the Superfund identifies

See TRITIUM Page 3

Tritium

FROM FRONT PAGE
priority cleanup sites in the nation and ranks whether sites deserve federal attention and cleanup.

The EPA conducted the review at the request of the Committee to Minimize Toxic Waste, a local lab watchdog group.

Tritium is emitted in the form of gas and tritiated water vapor from a smokestack located near the National Tritium Handling Facility, according to the report.

The lab's report determined that tritium contaminated ground water, surface water, soil and soil water both inside and outside the lab's boundaries. In addition, air samples on either side of the lab's boundaries revealed amounts of tritium that exceeded the limits of the EPA's cancer risk screening concentration, the report said.

The lab has not been added to the Superfund list because its tritium levels are still below the EPA clean air public health standards, as decided by the National Emissions Standard for Hazardous Air Pollutants. Additional air, water and soil testing will be conducted in order to make a "final listing decision," according to the report.

Betsy Curnow, a spokesperson for the Superfund, said the agency determined more information was needed from the Department of Energy before it could issue a final report.

"We saw no basis for emergency

Tritium

FROM PAGE 3
action there," Curnow said. "The lab does meet the NESHAP standards. We are taking more time to study the problem."

EPA spokesperson Shelly Rosenblum said "the overall issue is whether it poses a threat to the public, and (the lab) is safe."

Some scientists, former lab employees and community activists disagree with the government decisions that there is a safe level of radiation.

"I believe that if you look at those who have money coming from the government and industry, they support it," said Dale Nesbitt, a retired LBNL engineer in the field of high energy physics apparatuses.

Other members of the group pointed to the report's inconsistency.

"The report is circular — everything is safe but it qualifies for the Superfund list, but we don't put them on because they can police themselves," said Gene Bernardi, the co-chair of the Committee to Minimize Toxic Waste. "As a result, they don't put LBNL on even though it qualifies."

See TRITIUM Page 6

Attachment 15 –
Attachment 6 of Pamela Sihvola and LA Wood Letter June 7, 2005

HAZARDOUS
WASTE AND
SUBSTANCES
SITES LIST
APRIL 1998
CORTESE
LIST

To: Interested Parties:

Inclosed is a copy of the current Hazardous Waste and Substances Sites List consolidated by the Department of Toxic Substances Control Code pursuant to Government Code Section 65962.5.

Government Code Section 65962.5

**List of Hazardous Waste and Substance Sites;
Submission to California Environmental Protection Agency
Department of Toxic Substances Control
Office of Environmental Information Management**

- (A) The Department of Toxic Substances Control shall compile and update as appropriate, but at least annually, and shall submit to the California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control, Office of Environmental Information Management a list of all of the following:
- (1) All hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code.
 - (2) All land designated as hazardous waste property or border zone property pursuant to Article 11 (commencing with Section 25220) of Chapter 6.5 of Division 20 of the Health and Safety Code.
 - (3) All information received by the Department of Toxic Substances Control pursuant to Section 25242 of the Health and Safety Code on hazardous waste disposals on public land.
 - (4) All sites listed pursuant to Section 25356 of the Health and Safety Code.
 - (5) All sites included in the Abandoned Site Assessment Program.
 - (6) A list of all public drinking water wells which contain detectable levels of organic contaminants and which are subject to water analysis pursuant to Section 4026.2 or 4026.3 of the Health and Safety Code.
- (B) The State Water Resources Control Board shall compile and update as appropriate, but at least annually, and shall submit to the California Environmental Protection Agency, a list of all of the following:
- (1) All underground storage tanks for which an unauthorized release report is filed pursuant to Section 25295 of the Health and Safety Code.
 - (2) All solid waste disposal facilities from which there is a migration of hazardous waste and for which California Regional Water Quality Control Board has notified the State Department of Toxic Substances Control pursuant to subdivision (e) of Section 13273 of the Water Code.
 - (3) All cease and desist orders issued after January 1, 1986, pursuant to Section 13301 of the Water Code, which concern the discharge of wastes which are hazardous materials.
- (C) The local enforcement agency, as designated pursuant to Section 18051 of Title 14 of the California Administrative Code, shall compile as appropriate, but at least annually, and shall submit to the California Integrated Waste Management Board, a list of all solid waste disposal facilities from which there is a known migration of hazardous waste. The California Integrated Waste Management Board shall compile the local lists into a statewide list which shall be submitted to the California Environmental Protection Agency and shall be available to any person who requests the information.
- (D) The California Environmental Protection Agency shall consolidate the information submitted pursuant to this section and distribute it in a timely fashion to each city and county in which sites on the lists are located.
- (E) Before a local agency accepts as complete an application for any development project which will be used by any person, the applicant shall consult the lists sent to the appropriate city or county and shall include a signed statement to the local agency indicating whether the project is located on a site which is included on any of the lists compiled pursuant to this section. If the site is included on a list, the list shall be specified on the statement.
- (F) This section shall become operative on July 1, 1987.

CITY LIST
04/15/98

DTSC
FACILITY INVENTORY DATA BASE
HAZARDOUS WASTE AND SUBSTANCES SITES LIST

PGM: CALEPA5
PAGE 45

SORT BY CITY, ST NAME, ST NBR

STREET NBR	STREET NAME	CITY	ZIP	FACILITY NAME	CO	REG BY	REG ID
1441	ASHBY	BERKELEY	94702	CM SERVICE STATION	1	LTNKA	01-0250
2629	ASHBY	BERKELEY		WRIGHT'S AUTOMOTIVE	1	LTNKA	01-2092
3009	ASHBY	BERKELEY	94705	BRIDGEWAY SERVICE	1	LTNKA	01-1949
3048	ASHBY	BERKELEY		CHEVRON	1	LTNKA	01-0357
735	ASHBY	BERKELEY		WEATHERFORD BMW	1	LTNKA	01-1803
840	ASHBY	BERKELEY		TEXACO	1	LTNKA	01-1243
901	ASHBY	BERKELEY		SUPER 7	1	LTNKA	01-1444
930	ASHBY	BERKELEY		MACBETH HARDWARE COMPANY	1	LTNKA	01-0931
2116	BANCROFT	BERKELEY	94704	PACIFIC BELL	1	LTNKA	01-1110
600	BANCROFT	BERKELEY	94710	ENGINEERING SCIENCE	1	LTNKA	01-2330
800	BANCROFT	BERKELEY	94710	DAVLIN PAINT COMPANY	1	LTNKA	01-1985
829	BANCROFT	BERKELEY		TRANSAMERICA DEVAUAL	1	LTNKA	01-1496
2151	BERKELEY	BERKELEY	957049980	CA DHS LABRATORY FACILITY	1	LTNKA	01-2082
2199	BERKELEY	BERKELEY	94707	CHEVRON	1	LTNKA	01-0342
2034	BLAKE	BERKELEY	94704	KALMAR PROPERTY	1	LTNKA	01-0848
945	CAMELIA	BERKELEY	947100000	CLEAR COMM	1	LTNKA	01-1550
1025	CARLETON	BERKELEY	94710	STUDIO COMPLEX	1	LTNKA	01-1432
1035	CARLETON	BERKELEY	94710	OLIVER COMPANY	1	LTNKA	01-1092
2000	CARLETON	BERKELEY		UC BERKELEY PHYSICAL PLAN	1	LTNKA	01-1524
811	CARLETON	BERKELEY	94710	MACAULAY FOUNDRY	1	LTNKA	01-0932
893	CARLETON	BERKELEY	94710	ELECTRO-COATING INC - PLA	1	CALSI	01340001
1745	CEDAR	BERKELEY		STAN ANDERSON SERVICE	1	LTNKA	01-1420
2271	CEDAR	BERKELEY		CARDUCCI PROPERTY	1	LTNKA	01-0279
650	CEDAR	BERKELEY		PACIFIC STEEL CASTING	1	LTNKA	01-1128
695	CEDAR	BERKELEY	94710	AH THOMPSON	1	LTNKA	01-2214
801	CEDAR	BERKELEY	94704	CASE ENGINEERS	1	LTNKA	01-2364
830	CEDAR	BERKELEY	94704	ADMIRAL MOVING SYSTEMS	1	LTNKA	01-0032
2148	CENTER	BERKELEY		TOLTEC PROPERTY	1	LTNKA	01-1857
1336	CHANNING	BERKELEY	947020000	MAXWELL CAMERON PRDPERTY	1	LTNKA	01-2476
2029	CHANNING	BERKELEY		GLM REAL ESTATE SERVICES	1	LTNKA	01-0704
2515	CHANNING	BERKELEY	947200000	UC BERKELEY	1	LTNKA	01-2367
2935	CLAREMONT	BERKELEY		CLAREMONT CONTINENTAL GAR	1	LTNKA	01-1561
3001	COLBY	BERKELEY		ALTA BATES HOSPITAL	1	LTNKA	01-0067
2555	COLLEGE	BERKELEY	94704	DON AUTO CLINIC	1	LTNKA	01-0504
2942	COLLEGE	BERKELEY	94705	COLLEGE CLEANERS	1	LTNKA	01-1915
3170	COLLEGE	BERKELEY		RIPSTEEN PROPERTY	1	LTNKA	01-0184
1	CYCLOTRON	BERKELEY	94720	LAWRENCE BERKELEY LAB BUI	1	LTNKA	01-1520
1	CYCLOTRON	BERKELEY	94720	LAWRENCE BERKELEY LAB ALS	1	LTNKA	01-1521
1	CYCLOTRON	BERKELEY	94720	LAWRENCE BERKELEY LAB BUI	1	LTNKA	01-1522
1	CYCLOTRON	BERKELEY	94720	LAWRENCE BERKELEY LAB BUI	1	LTNKA	01-1518
1	CYCLOTRON	BERKELEY	94720	LAWRENCE BERKELEY LAB BUI	1	LTNKA	01-1519
1	CYCLOTRON	BERKELEY	94720	LAWRENCE BERKELEY LAB BUI	1	LTNKA	01-2368
1500	DERBY	BERKELEY	947030000	LONGFELLOW MIDDLE SCHOOL	1	LTNKA	01-2453
2131	DURANT	BERKELEY	94704	JACKSON PROPERTY	1	LTNKA	01-0813
2140	DURANT	BERKELEY	94704	GOSS ROSS DOYLE TRUST	1	LTNKA	01-0714
2200	DURANT	BERKELEY	94704	SHELL	1	LTNKA	01-1343
2600	DURANT	BERKELEY	94704	HOTEL DURANT	1	LTNKA	01-1947
1812	DWIGHT	BERKELEY		URBAN DESIGNS	1	LTNKA	01-1620
2001	DWIGHT	BERKELEY		HERRICK HOSPITAL ALTA BAT	1	LTNKA	01-0757
1255	EASTSHORE	BERKELEY	947101095	FACILITY 21203-1	1	LTNKA	2662
1285	EASTSHORE	BERKELEY		CHEVRON	1	LTNKA	01-0318
1331	EASTSHORE	BERKELEY	94710	SOUTHLAND SITE NO 17296	1	LTNKA	2999
1475	EASTSHORE	BERKELEY		GREEN VALLEY PLANT RENTAL	1	LTNKA	01-0059
1501	EASTSHORE	BERKELEY		1 RENTAL	1	LTNKA	01-0001

Attachment 16 –
Attachment 7 of Pamela Sihvola and LA Wood Letter June 7, 2005

FRIDAY, JANUARY 12, 2001

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San Francisco Chronicle

NATION & CALIFORNIA

Government Lists Cold War Nuclear Sites

Workers now sick urged to request compensation

By Katherine Rizzo
ASSOCIATED PRESS

WASHINGTON — The government identified the hundreds of mills, foundries and factories that did nuclear weapons work during the Cold War in a step yesterday toward identifying workers who might qualify for compensation because they were made sick by their jobs.

The Energy Department examined records going back 60 years in an effort to document every facility that handled the deadly metal beryl-

lium or radioactive materials.

David Michaels, the Energy Department's top health official, cautioned that some of the sites played very minor roles in the history of weapons production.

For example, while Mallinckrodt Chemical Co. in St. Louis processed thousands of tons of uranium, Star Cutter Corp. in Farmington, Mich., only had five pieces of uranium on site for one day while testing a special saw.

But Energy Secretary Bill Richardson urged sick workers who were employed at the facilities to contact the government.

"The burden of proof is on the government, not the worker. We will be open and candid this time, not like in the past," he said.

The list includes 317 sites that employed 600,000 people in 37 states, the District of Columbia,

"We will be open and candid this time, not like in

the past."

BILL RICHARDSON
Energy secretary

Puerto Rico and the Marshall Islands. Some were government-owned, but most were private companies that did business for the Energy Department or the Atomic Energy Commission.

Ailing workers and the families of many dead workers spent years pushing the government to take responsibility for illnesses caused by on-the-job exposure to high levels of radiation.

Many sick workers complained they could not get adequate care because the substances to which they were exposed were considered classified information.

As recently as President Clinton's first term, the government routinely fought worker compensation claims.

Under a program approved by Congress last year, employees of facilities doing Energy Department work who contracted cancer as a result of radiation exposure, as well as those who contracted a lung disease from beryllium or silica, can receive government-paid medical care plus \$150,000. The first checks should go out later this year.

Many of the privately owned sites have not performed work for the Energy Department for decades.

Still to be decided is how the

California Hot Spots

Facilities in California that handled beryllium or radioactive materials include:

Arthur D. Little Co., San Francisco

Ceradyne, Inc., Santa Ana

Dow Chemical Co., Walnut Creek

General Atomics, La Jolla

General Electric Vallejos, Pleasanton

Hunter Douglas Aluminum Corp., Riverside

Laboratory for Energy-Related Health Research, Davis

Laboratory of Biomedical and Environmental Sciences, Los Angeles

Laboratory of Radiobiology and Environmental Health, San Fran-

cisco

Lawrence Berkeley National Laboratory, Berkeley

Lawrence Livermore National Laboratory, Livermore

Sandia Laboratory, Salton Sea Base, Imperial County

Sandia National Laboratories, Livermore unit, Livermore

Stanford Linear Accelerator Center, Palo Alto

Stauffer Metals, Inc., Richmond University of California, Berkeley

Source: Department of Energy

compensation program will determine which people from such sites got sick because of work done for the government

"This is a very sensitive area," said Richard Miller, a workers' advocate from Holyoke, Mass. "There are places where the DOE had no con-

tract for ... or a mill didn't roll uranium after a certain date, but the buildings remained contaminated."

A complete list of the weapons plants can be found on the Energy Department's Web site, www.eh.doe.gov. The department's toll-free number is (877) 447-9756.