

From: Rohlfes_Larry@DTSC
To: Singh_Mike@DTSC
Subject: FW: Response to Public Records Act Request- Rocketdyne/Atomics Documents
Date: Friday, September 23, 2016 4:33:51 PM
Attachments: [image001.png](#)
[image003.png](#)
[image005.png](#)
[Public Records Act request-Weitzberg.pdf](#)
[Response to Mr. Weitzberg.pdf](#)
[SSFL 1997.pdf](#)
[Rocketdyne Studies - September 1997.pdf](#)

From: Abe Weitzberg [mailto:aweitzberg@att.net]
Sent: Thursday, September 22, 2016 7:24 PM
To: Rohlfes, Larry@DTSC <Larry.Rohlfes@dtsc.ca.gov>
Cc: Kracov, Gideon@DTSC <Gideon.Kracov@dtsc.ca.gov>; Campbell, Arezoo@DTSC <Arezoo.Campbell@dtsc.ca.gov>; Vizzier, Mike@DTSC <Mike.Vizzier@dtsc.ca.gov>
Subject: FW: Response to Public Records Act Request- Rocketdyne/Atomics Documents

Larry,
Please post this email and attachments. The information was obtained from CA DPH via a Public Records Act request and relates to their involvement with SSFL health studies and the acrimonious interactions with Dan Hirsch and his supporting elected officials. In part it explains why Hirsch was able to exclude DPH with its radiological and public health expertise from having a major role in the SSFL cleanup discourse. The excerpts below are taken from the 1999 memo to Joe Munso at the end of the 3 MB document.

Abe

In exercising what it thought was its facilitative prerogative DHS staff (Dr. Harrison) experienced the following conflicts with Mr. Hirsch

- 1) Mr. Hirsch did not want the majority vote to be controlled by the scientists
- 2) Mr. Hirsch disagreed with the majority vote to select the UCLA team to do the work
- 3) Mr. Hirsch and a majority but not all of the Panel did not want to pursue the usual DHS and National Institute of Occupational Safety and Health (NIOSH) tri-partite procedure of sharing research draft results for comment by management, labor and government. They wanted to exclude Rocketdyne/Boeing from the loop. Dr. Harrison viewed this vote as advisory not binding. Senator Wright Assemblymember Katz and Assemblymember Kuehl shared Mr. Hirsch's outrage at this procedure. (Despite this outrage, everyone now agrees that the process worked. The UCLA researchers benefited from comments received and did not allow themselves to be unduly influenced by the comments. Despite the fact that it worked, Hirsch and the legislators are against the tri-partite procedure as a matter of principle)

.....

When DHS staff in the Environmental Health Investigations Branch (EHIB) under Dr. Kreutzer began exercising what they thought of as their facilitative responsibility by contacting the advisory/oversight committee, exploring federal funding etc. Mr. Hirsch and the legislators had the following objections:

- 1) DHS should not seek funds for a feasibility study
- 4) DHS should not communicate with the Panel Members except through Mr. Hirsch and the Co-Chair (who had resigned to go to DOE)
- 5) DHS should not prepare proposals to the Panel on what a draft RFP might look like
- 6) DHS should have no contacts with Rocketdyne to see if their offer to fund studies could be accepted without strings and in a way acceptable to the Panel and the legislators.
- 7) DHS should make no recommendations as to the kind of additional scientific expertise need by the panel as it shifted from a worker to a neighborhood focus.

Abe Weitzberg phone: 818-347-5068
5711 Como Circle mobile: 301-254-9601
Woodland Hills, CA 91367

From: Gomes, Lidia (CDPH-DEODC) [<mailto:Lidia.Gomes@cdph.ca.gov>]
Sent: Thursday, October 01, 2015 5:36 PM
To: aweitzberg@att.net
Cc: Kreutzer, Rick (CDPH-DEODC); Stupple, Alexandra (CDPH-EXEC-OLS)
Subject: Response to Public Records Act Request- Rocketdyne/Atomics Documents

(Sent on behalf of Rick Kreutzer, MD, Chief)

Dear Mr. Weitzberg,

Attached, please find our response to your Public Records Act (PRA) request signed by Rick Kreutzer, MD on October 1, 2015.

Sincerely,

Lidia Gomes
Division of Environmental and Occupational Disease Control
California Department of Public Health
850 Marina Bay Parkway, Bldg. P, 3rd Floor
Richmond, CA 94804

(510) 620-3130 {Main Line}
(510) 620-3141 {Fax}
Lidia.Gomes@cdph.ca.gov



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Costelli, Lorna (CDPH-DIR)

From: Abe Weitzberg <aweitzberg@att.net>
Sent: Sunday, September 20, 2015 9:37 AM
To: CDPH INTERNET ADMIN
Subject: Public records request

I am requesting copies of all documents or email communications received by or originated by Dan Hirsch and received by or copied to DTSC staff relating to the conduct of the following studies:

Morgenstern, H., et.al., 1997. Epidemiologic Study to Determine Possible Adverse Effects to Rocketdyne/Atomics International Workers from Exposure to Ionizing Radiation. Final Report to the Public Health Institute, Berkeley, CA (Subcontract No. 324A-8701-S0163), June 1997.

Morgenstern, H., et.al., 1999. Epidemiologic Study to Determine Possible Adverse Effects to Rocketdyne/Atomics International Workers from Exposure to Selected Chemicals. Addendum Report to the Public Health Institute, Berkeley, CA (Subcontract No. 324A-8701-S0163), January 1999.

The timeframes of interest are the several years prior to and during the conduct of these studies, such as 1994 through 1999. These studies were conducted under the direction of the SSFL Advisory Panel that was led by Dan Hirsch and it has been suggested that some of the guidance provided by Hirsch should be made available to the public.

I understand that because Dan Hirsch is a member of the public, these records are public and would be available to me. Also, because they were electronic records they may exist in electronic form and as such that would be the preferred form for me to receive the records.

My contact information is below.

Sincerely,



Abraham Weitzberg

Telephone: 818-357-5068
Mobile: 301-254-9601
Email: aweitzberg@att.net

Abe Weitzberg phone: 818-347-5068
5711 Como Circle mobile: 301-254-9601
Woodland Hills, CA 91367



State of California—Health and Human Services Agency
California Department of Public Health



KAREN L. SMITH, MD, MPH
 Director and State Health Officer

EDMUND G. BROWN JR.
 Governor

October 1, 2015

sent via email

Mr. Abraham Weitzberg
 5711 Como Circle
 Woodland Hills, CA 91367

Dear Mr. Weitzberg:

On September 21, 2015 the California Department of Public Health (CDPH) received your email dated September 20, 2015 requesting records under the Public Records Act. In your letter you requested electronic documents received by or originated by Dan Hirsch and received by or copied to DTSC staff relating to *“Epidemiologic Study to Determine Possible Adverse Effects to Rocketdyne/Atomics International Workers from Exposure to Ionizing Radition”* from 1997 and 1999. We were able to locate related documents and they are identified as follows:

Record	Pages
Santa Susana Field Laboratory Epidemiological Study: Report of the Oversight Panel, September 1997.	11
Fax cover sheet from Marilyn Underwood, Ph.D. September, 29, 1997.	43
Document named, “SSFL April 1999,” PDF. Santa Susana Filed Laboratory Epidemiological Study, Part II: Exposures to Selected Chemicals. Report of the Oversight Panel Co-Chairs, April 1999.	14

If you have any questions regarding this matter, please contact me at (510) 620-3130 or rick.kreutzer@cdph.ca.gov.

Sincerely,

Rick Kreutzer, MD
 Chief
 Division of Environmental and Occupational Disease Control

Enclosures

Mr. Abraham Weitzberg
October 1, 2015
Page 2

cc: Alexandra Stupple, Attorney
California Department of Public Health
Office of Legal Services
1415 L Street, Suite 500, MS 0010
Sacramento, CA 95814

FAX COVER SHEET

CALIFORNIA DEPARTMENT OF HEALTH
SERVICES

ENVIRONMENTAL HEALTH INVESTIGATIONS
BRANCH
1515 CLAY STREET, SUITE 1700
OAKLAND, CA 94612



Date: _____

Number of pages including cover sheet: _____

To:

Burt Cooper

Phone:

404 639-6050

Fax phone:

404 639-6075

CC:

From:



STATE OF CALIFORNIA

Marilyn C. Underwood, Ph.D.
Staff Toxicologist

Department of Health Services
Environmental Health
Investigations Branch
1515 Clay Street, Suite 1700
Oakland, CA 94612

(510) 622-4415 FAX (510) 622-4505
E-mail: cdhsmarilyn@earthlink.net

REMARKS:



Urgent



For your review



Reply ASAP



Please comment

Raymond ~~of~~ Rick had not seen a copy of the Governor letter that apparently went out last week.

The scope of work can be found in the letter sent to B. Johnson and the other Advisory Panel Members. Raymond left a message on Henry Faulk's phone saying he was available to talk.



COUNTY OF SANTA BARBARA • HEALTH CARE SERVICES
TRI-COUNTIES REGIONAL CANCER REGISTRY

345 Camino Del Ramedio Santa Barbara, CA 93110
 Phone (805) 681-5136 Fax (805) 681-6159

Steven A. Escobedo, HCS Director
 Roger R. Heroux, HCS Assistant Director
 Elliot Schatzman, MD, Health Officer
 Sue Watkins, ART, CTR, Cancer Registry Director

September 29, 1997

Paul E. Lorenz
 Director,
 Ventura County Public Health
 3147 Loma Vista Road
 Ventura, CA 93003

Dear Mr. Lorenz

Thank you very much for your letter of September 15, offering me the opportunity to participate in the local network to monitor the issue of cancer in the Simi Valley Area. I will be honored to participate.

In response to your request for data on cancer incidence in Simi Valley, I have performed a preliminary analysis on cancer incidence among residents in a five mile radius of Santa Suzana Field Laboratory (SSFL) and would like to share the results with you.

One of the ways in which California Cancer Registry responds to concerns about apparent increase of cancer cases in a locality is to perform an observed/expected analysis, i.e. to compare the number of cancer cases registered among the population in the area of interest with the estimates of the expected numbers. The objective of this analysis is to determine if residents of the area under study are at a higher risk of developing cancer. The observed numbers come from the regional registry databases and includes all cases registered for one or more census tracts that cover the area of interest, during a specific time period. The expected numbers are calculated by applying an age, sex, race specific standard incidence rate to the age, sex, and race specific population estimates of the study area. The standard rate used in the Tri-Counties Region is the 1988-92 average annual rate for the region which includes San Luis Obispo, Santa Barbara, and Ventura counties. Average annual rates have less variations and are a much better representative of cancer incidence in an area. Population estimates are derived from the 1990 census for the census tracts covering the study area. By applying the standard rate to the census population, the number of cases expected in 1990 is obtained. Since neither the U.S. Bureau of the Census nor the California Department of Finance estimate population of the census tracts for intercensal years, to arrive at the total expected number the 1990 estimates must be multiplied by the number of years in the study period.

For the present analysis I followed the pattern of the 1992 study by the California Department of Health Services (DHS) "Cancer Incidence Near The Santa Suzana Field Laboratory, 1978-1989".

1. The present analysis included all invasive cancers registered with the Tri-Counties Regional Cancer Registry for 1988-1995 calendar years. Data for 1988-1994 are considered complete; data for 1995 were estimated to be 88 percent complete as of September 22, 1997.
2. The study area includes the census tracts within a five miles radius of the SSFL. Although these tracts do not cover all parts of the city of Simi Valley they represent a geographic area identical to the area covered in the previous study by DHS. The following census tracts (74.01, 75.02, 75.03, 79.01, 79.02, 80.01, 80.02, 80.03, 81.01, 81.02, 82.00, 82.02, 83.02, 83.03, 83.04, 84.01, 84.02, 85.01, 85.02) with a population of 90,804 in 1990 census were selected.
3. Cancers were divided into three groups of very radiosensitive (thyroid, bone & joints, all leukemia, excluding chronic lymphocytic leukemia), moderately radiosensitive (breast, lung & bronchus), and possibly radiosensitive (esophagus, stomach, liver, brain & other nervous system, urinary bladder, other urinary system, and multiple myeloma). This classification is also based on the DHS study except for excluding cancers of the salivary gland and parathyroid from the last group.
4. Differences between the observed and expected numbers are statistically evaluated for departure from normal variations at the level of 99% confidence interval. With almost 6000 census tracts in California, even using a 99% confidence interval means that at any given time 30 census tracts could be declared as having a statistically significant increase in a particular type of cancer by chance.
5. A major limitation in this approach is the lack of accurate intercensal population estimates at the level of census tract. There is no adjustment for population increase in this approach, except that it is assumed that population changes around the census year will balance out. This will result in an unspecified underestimation of the expected numbers.

Results of this analysis for the parts of Ventura county that lies within the five miles radius of SSFL are presented in Table 1. This table presents both the observed and expected numbers by gender for the study period. Among the very radiosensitive cancers, the number of registered leukemia in women is significantly lower than expected. This also brings the total number of all very radiosensitive cancers for women to a significantly lower level. Neither the reason nor the significance of this observation is clear at the present time. Among the moderately radiosensitive cancers, the total number of registered cancers of the lung & bronchus is significantly higher than expected. Close to 85% of all lung cancers are due to smoking tobacco. Unfortunately, cancer registry does not collect proper data on smoking. For all other sites, the observed numbers were all within the limits of normal variation expected in a biological phenomenon such as cancer incidence.

My conclusion from this simple preliminary analysis is that residents of the study area seem to have cancer incidence risk which is similar to that of the other residents of the Tri-Counties Region, except for leukemia in women which is significantly lower, and cancer of the lung & bronchus which is higher. Further analysis of the available data on this issue may be helpful in determining the nature of this observation.

Table 1. Results of the Observed/Expected Analysis for the Incidence of Invasive Cancers in Ventura County, 1988-1995 Cases.

	Male		Female		Total	
	OBS	EXP	OBS	EXP	OBS	EXP
Vary Radiosensitive	43	36.8	34	57.2	77	94.0
Thyroid	11	10.3	26	35.7	37	45.9
Bone & Joints	5	2.7	2	2.1	7	4.8
Leukemia (Excl. CLL)	27	23.9	6	19.4	33	43.2
Moderately Radiosensitive	169	147.2	461	441.1	630	588.3
Lung & Bronchus	166	145.7	140	115.3	306	261.0
Breast	3	1.5	321	325.8	324	327.3
Possibly Radiosensitive	167	144.5	69	73.8	236	218.3
Esophagus	19	12.2	3	4.1	22	16.2
Stomach	23	21.3	16	10.7	39	32.0
Liver	8	7.6	5	3.7	13	11.3
Brain & Other Nervous System	30	23.2	16	17.0	46	40.2
Urinary Bladder	42	41.0	10	14.1	52	55.1
Other Urinary System	39	30.3	8	16.2	47	46.5
Multiple Myeloma	6	9.0	11	7.9	17	17.0
All Invasive Cancers	964	927.5	988	964.4	1,952	1,892.0
OBS: Observed EXP: Expected CLL: Chronic Lymphocytic Leukemia						

Please do not hesitate to contact me if you have further questions or need additional analysis.

Cordially,

K. Nasseri

Kiumarss Nasseri, DVM, MPH, PhD
Research Epidemiologist

cc. Sus Watkins, RRA, CTR. Director, Tri-Counties Regional Cancer Registry
Eva Glazer, MD, MPH. Medical Epidemiologist, Cancer Surveillance Program
Robert Schlag, M.Sc., Chief, Research and Surveillance Program, California Cancer Registry

DEPARTMENT OF HEALTH SERVICES

1515 CLAY STREET, SUITE 1700

OAKLAND, CA 94612

(510)622-4411



March 29, 1999

SAME LETTER SENT TO THE ATTACHED LIST

Barbara Johnson
6714 Clear Springs Road
Simi Valley, CA 93063

Dear Ms. Johnson:

Last November I wrote you to clarify the Environmental Health Investigations Branch, California Department of Health Services' (EHIB,DHS) role regarding Santa Susana Field Laboratory (SSFL) and determination of community exposures from site related activities. I indicated that we would carry out six activities prior to your next meeting. These were:

1. Poll each member of the Advisory Panel (AP) to solicit their opinions about DHS's role in community exposure and health considerations;
2. Poll each member of the AP for suggestions on relevant environmental expertise, if any, to be added to the AP;
3. Poll each member of the AP to determine their willingness to continue serving on the AP if funds are found to carry out a feasibility study;
4. Prepare an inventory of documents from various agencies which are relevant to the reconstruction of exposures to the surrounding neighborhoods through air, water, etc.;
5. Prepare a draft schematic scope of work and workload for a hypothetical contract for your review and comment and a description of the type of oversight we think would be needed;
6. Resume exploration of possible federal funding for the feasibility study.

I am writing now in anticipation of the AP meeting in mid-April. Since our polling of nine advisory members in January, there has been an additional provision in the governor's budget (FY 1999/2000) to provide DHS with \$150,000 in support of activities with the AP to address a feasibility study on environmental exposure. Our conversation with panel members indicated that the majority of members intend to continue on the panel, and that additional expertise in environmental health may be needed. In addition, there was a mixed response regarding what EHIB's role should be in future activities. While many felt EHIB should play some role, there were differing opinions on how large that role should be. Given that state funds would come through DHS and we have a broad mandate to preserve and protect public health in California, I would like to discuss with the AP at the next meeting, or soon thereafter, how we can work together as well as some of my preliminary thoughts about a feasibility study. In anticipation of that discussion, I am enclosing materials that I hope will be useful in considering questions of community exposure and health studies.

Enclosure 1-An inventory of documents by responsible agency and description of the volume of materials. The information was provided by various agencies and has not been

Barbara Johnson
March 29, 1999
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verified by EHIR staff. If anyone knows of other sources of information, they could be added to the list.

Enclosure 2-A draft scope of work as it might be described in a request for proposals.

Enclosure 3-A schematic decision tree with annotation which indicates the technical requirements for a community health study concerning exposures from SSFL activities. I have elaborated the branches of the decision tree where all elements for a study are present. For some AP members, this enclosure may help focus the questions on which specific exposures (past and/or present) can be measured, whether enough exposed people can be located to warrant conducting a study, whether measurable health outcomes are anticipated, whether confounders can be sufficiently controlled, and whether an hypothetical positive community health study will result in productive/beneficial actions. Certainly, other assumptions and values might indicate a different rationale for justifying a health study.

Enclosure 4-A copy of a letter sent to the Agency for Toxic Substances and Disease Registry (ATSDR) to solicit funds in support of a feasibility study. Their leadership has changed recently and we have not yet had a response. The dollar amount requested was an estimate based upon our experiences.

While it is impossible to predict the future of the above-mentioned State budget provision after legislative deliberations, I feel that we will need to discuss how these modest funds might be spent. In our judgment, there is not enough money to both convene the AP and carry out such a study. Also, I am unaware of other DHS resources that could be redirected to cover both activities.

I hope these materials will prove helpful to you. I will be happy to receive any comments or questions prior to the AP meeting in April and I will hope that we have some opportunity at the next meeting, or one soon thereafter, for discussion of these issues.

Sincerely,

Richard Kreutzer, M.D., Chief
Environmental Health Investigations Branch

Enclosures

cc: see next page

Barbara Johnson

March 29, 1999

Page 3

cc: Ms. Jennifer Sugar
Office of Legislative Liaison
Legislative and Governmental Affairs
Department of Health Services
714 P Street, Room 1350
Sacramento, CA 95814

Dr. Robert Harrison
California Occupational Health Branch
Department of Health Services
1515 Clay Street, Suite 1901
Oakland, CA 94612

Mr. Larry Bilick
California Occupational Health Branch
Department of Health Services
1515 Clay Street, Suite 1901
Oakland, CA 94612

Dr. James Cone, Chief
California Occupational Health Branch
Department of Health Services
1515 Clay Street, Suite 1901
Oakland, CA 94612

Mr. Donald Koepp, Director
Environmental Health Division
County of Ventura
800 S. Victoria Avenue
Ventura, CA 93009-1730

Mr. Arturo Aguirre
Director of Environmental Health
Los Angeles County
2525 Corporate Place, Suite 150
Monterey Park, CA 91754

The Honorable Cathie Wright
Member of the Senate
State Capitol
Sacramento, CA 95814

The Honorable Sheila Kuehl
Member of the Assembly
State Capitol
Sacramento, CA 95814

The Honorable Diane Feinstein
United States Senate
Senate Office Building
Washington, D.C. 20510

Ms. Judy Michael
Ventura County Supervisor
District 4
3855-F Alamo
Simi Valley, CA 93063

Mr. Michael Antonovich
Los Angeles County Supervisor
District 5
500 W. Temple, Room 869
Los Angeles, CA 90012

Mr. Ed Bailey, Chief
Radiologic Health Branch
601 N. 7th Street
Sacramento, CA 95814

Mr. Thomas Kelly
Environmental Engineer
US Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105-3901

Mr. Steve LaFlam
Boeing Defense and Space Group
6633 Canoga Avenue, MS SS-14
PO Box 7922
Canoga Park, CA 91309-7922

Barbara Johnson
March 29, 1999
Page 4

Dr. Heather Stockwell
Building 270CC
US Department of Energy
19901 Germantown Road
Germantown, MD 20874-1290

Ms. Penny Nakashima
Department of Toxic Substance Control
1011 North Grandview
Glendale, CA 91201

Ms. Carol Henderson, Manager
Bell Canyon Home Owner's Association
Bell Canyon, CA 91307

Mr. Mark Finucane
Los Angeles County Health Officer
313 N. Figueroa Street
Los Angeles, CA 90012

Dr. Gary Feldman
Ventura County Health Officer
3147 Loma Vista Road
Ventura, CA 93003

March 29, 1999

Same letter sent to the following:

Jack Geiger, M.D.
The City University of New York Medical School
Department of Community Health and Social
Medicine
138th Street & Covenant Avenue, Room J920
New York, NY 10031

Dan Hirsch
Committee to Bridge the Gap
1637 Butler Avenue, Room 203
Los Angeles, CA 90025

Caesar Julian, M.D.
2273 Tapo Street
Simi Valley, CA 93063

Franklin Mirer, Ph.D.
Industrial Hygienist and Toxicologist
International Union- UAW
Health and Safety Department
8000 East Jefferson Avenue
Detroit, MI 48214

Gerald Petersen, Ph.D.
Senior Epidemiologist, EH42
Department of Energy
19901 Germantown Road
Germantown, MD 20874

Jerry Raskin, Ph.D.
18350 Los Alimos
Northridge, CA 91326

Robert Goble, Ph.D.
Research Professor of Environment
Clark University
Center for Technology, Environment and Development
Worcester, MA 01610

Noah Seixas, Ph.D.
University of Washington
School of Public Health and Community
Medicine
Department of Environmental Health, MS SC34
Seattle, WA 98195

David Michaels, Ph.D.
Associate Professor
The City University of NY Medical School
Department of Community Health and Social
Medicine
138th Street & Covenant Avenue, Room J14
New York, NY 10031

Raymond Neutra, M.D., Dr.P.H., Chief
Division of Environmental and Occupational
Disease Control
California Department of Health Services
1515 Clay Street, Suite 1701
Oakland, CA 94612

Sheldon Plotkin, Ph.D.
3318 Colbert Avenue
Los Angeles, CA 90066

Robert Rinsky
Senior Research Epidemiologist
National Institute for Occupational Safety
and Health
4676 Columbia Parkway-R-44
Cincinnati, OH 45226

Alice Stewart, M.D.
Department of Public Health and Epidemiology
University of Birmingham
Edgbaston
Birmingham B15 2TT
United Kingdom

SUMMARY OF OFF-SITE DATA AT THE ROCKETDYNE SANTA SUSANA FIELD LABORATORY

Environmental analytical data from areas on and around the Santa Susana Field Laboratory (SSFL) are presented in a matrix. The matrix identifies where data is available, and references both chemical and radionuclide data.

The matrix is divided into environmental media (surface water, groundwater, soil/sediment and air). When data is available, a number references the report where the data may be found. The numbers of specific references are followed by a "C" that designates the report contains data on chemicals, and/or an "R" that designated the report contains radionuclide data. The references provide a general title of the report and a notation of the authors of the report. Blank spaces in the matrix designate an absence of data.

The off-site areas are divided into quadrants as illustrated in Figure 1. The northern (N) quadrant refers to the general areas of the Brandeis-Barden Institute and the Sage Ranch. The southern (S) quadrant refers to Bell Canyon area. The eastern (E) quadrant refers to Woolsey Canyon area. The western (W) quadrant refers to the Runkle ranch. Background data is the primary information listed for some quadrants for some references. A wind rose (Figure 2) provides general information on the prevailing wind patterns.

Estimates of the pages contained in selected referenced materials and reports are provided. In addition, an estimate of the total number of pages in the files at the DTSC is also provided. Listings of target analytes for selected data sets are presented.

DRAFT

03/24/99

Page 3

NOTES:

N quadrant includes the areas of Brandeis-Barden Institute and Sage Ranch areas

S quadrant includes the Bell Canyon area

E quadrant includes the Woolsey Canyon area

W quadrant includes the Runkle Ranch area

Surface water does not leave SSFL to the west quadrant.

No discharge sites to the west are regulated by NPDES.

Seeps and springs not identified to south, or west quadrants.

DRAFT

03/24/99

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Other Relevant Reports

Final RCRA Facility Assessment Report for Rockwell International Corporation, Rocketdyne Division, Santa Susana Field Laboratory, Ventura County, California. 1994. Prepared for the U.S. Environmental Protection Agency, Region IX, by the Science Applications International Corporation (SAIC). (EPA Contract No. 68-W9-0008).

Cancer Incidence in Five Los Angeles County Census Tracts. 1990. W. E. Wright and C. Perkins. Research and Surveillance Program, Cancer Surveillance Section.

Cancer Incidence Near the Santa Susana Field Laboratory, 1978-1989. 1992. P. Reynolds et. al. California Department of Health Services.

Santa Susana Field Laboratory Exposure Assessment Phase 1: Initial Evaluation Study. 1990. Prepared by ERC Environmental and Energy Services.

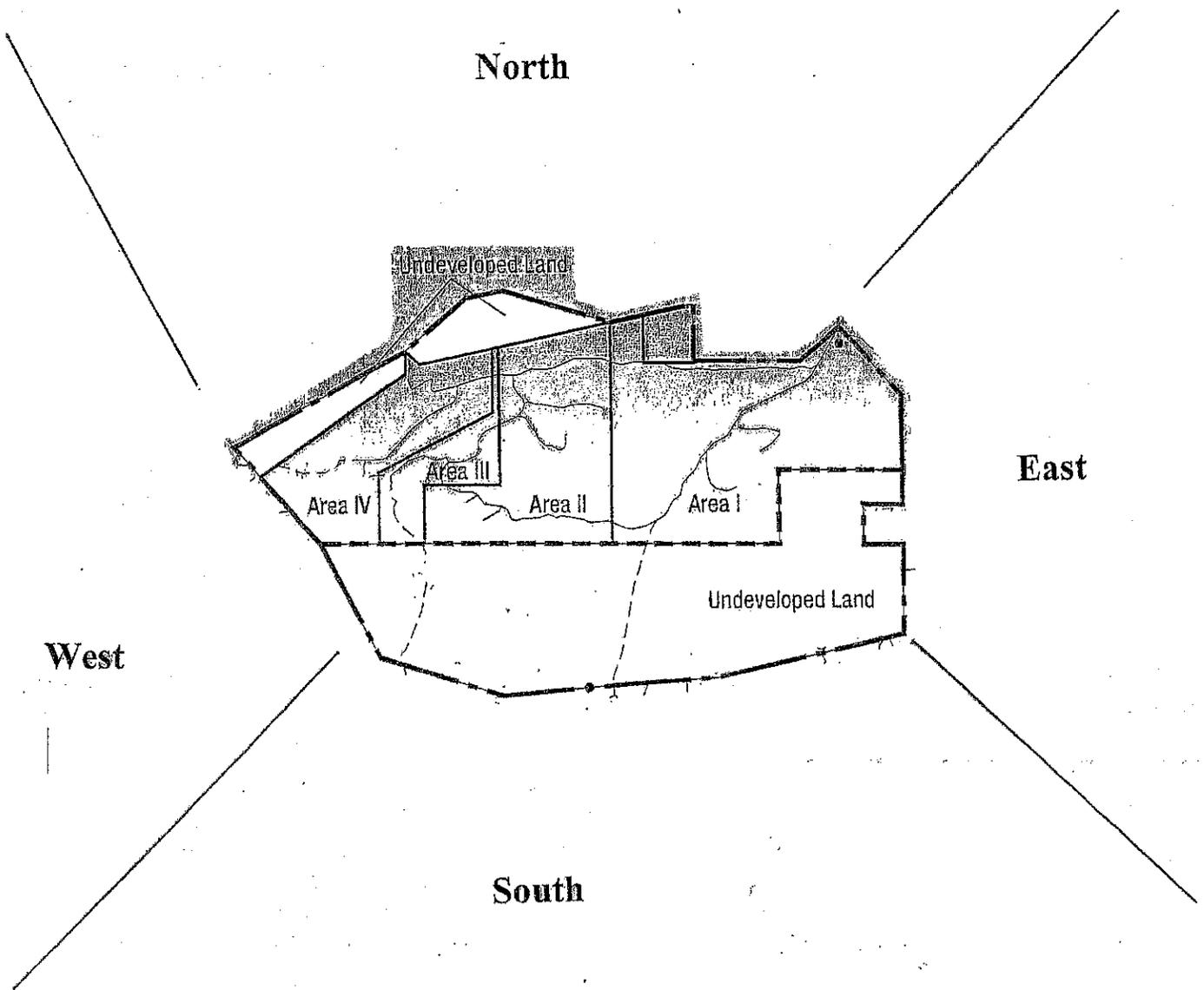


Figure 1. Approximate Boundaries of Quadrants Used to Describe Off-Site Data.

Target Analytes from:

Annual NPDES Monitoring Reports. Rocketdyne, 1993-1998 and 1984-1992

Metals

Antimony
Arsenic
Beryllium
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Selenium
Silver
Thallium
Zinc

Base/Neutral Extractibles

Acenaphthene
Benzidine
1,2,4-trichlorobenzene
Hexachlorobenzene
Hexachloroethane
Bis(2-chloroethyl) ether
2-chloronaphthalene
1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene
3,3'-dichlorobenzidine
2,4-dinitrotoluene
2,6-dinitrotoluene
1,2-diphenylhydrazine
Fluoranthene
4-chlorophenyl phenyl ether
4-bromophenyl phenyl ether
Bis(2-chloroisopropyl) ether
Bis(2-chloroethoxy) methane
Hexachlorobutadiene
Hexachlorocyclopentadiene
Isophorone
Naphthalene
Nitrobenzene
N-nitrosodimethylamine
N-nitrosodi-n-propylamine
N-nitrosodiphenylamine
Bis (2-ethylhexyl) phthalate
Butyl benzyl phthalate
Di-n-butyl phthalate
Di-n-octyl phthalate
Diethyl phthalate
Dimethyl phthalate
Benzo(a) anthracene
Benzo(a) pyrene
Benzo(b) fluoranthene
Benzo(k) fluoranthene
Chrysene
Acenaphthylene
Anthracene
1,12-benzoperylene
Fluorene
Phenanthrene
1,2,5,6-dibenzanthracene
Indeno (1,2,3-cd) pyrene
Pyrene
TCDD

Acid Extractibles

2,4,6-trichlorophenol
P-chloro-m-cresol
2-chlorophenol
2,4-dichlorophenol
2,4-dimethylphenol
2-nitrophenol
4-nitrophenol
2,4-dinitrophenol
4,6-dinitro-o-cresol
Pentachlorophenol
Phenol

Volatile Organics

Acrolein
Acrylonitrile
Benzene
Carbon tetrachloride
Chlorobenzene
1,2-dichloroethane
1,1,1-trichloroethane
1,1-dichloroethane
1,1,2-trichloroethane
1,1,2,2-tetrachloroethane
Chloroethane
Chloroform
1,1-dichloroethylene
1,2-trans-dichloroethylene
1,2-dichloropropane
1,3-dichloropropylene
Ethylbenzene
Methylene chloride
Methyl chloride
Methyl bromide
Bromoform
Bromodichloromethane
Dibromochloromethane
Tetrachloroethylene
Toluene
Trichloroethylene
Vinyl chloride
2-chloroethyl vinyl ether

Pesticides & PCBs

Aldrin
Chlordane
Dieldrin
4,4'-DDT
4,4'-DDE
4,4'-DDD
Alpha-endosulfan
Beta-endosulfan
Endosulfan sulfate
Endrin
Endrin aldehyde
Heptachlor
Heptachlor epoxide
Alpha-BHC
Beta-BHC
Gamma-BHC
Delta-BHC
Toxaphene
PCB 1016
PCB 1221
PCB 1232
PCB 1242
PCB 1248
PCB 1254
PCB 1260

only since 8/98

Target Analytes from:

Rocket Engine Source Test, Rocketdyne, 1991-1992

Arsenic	Benzene
Beryllium	Chloroform
Cadmium	Vinylidene Chloride
Total Chromium	Methylene Chloride
Copper	Toluene
Lead	Trichloroethylene, TCE
Manganese	Vinyl Chloride
Mercury	Xylenes, Total
Nickel	
Selenium	
Zinc	
Hexavalent Chromium	
Acenaphthylene	Formaldehyde
Acenaphthene	Acetaldehyde
Anthracene	Phenol
Benzo(a)anthracene	
Benzo(b)fluoranthene	Benzene
Benzo(k)fluoranthene	1,3-Butadiene
Benzo(a)pyrene	Chloroform
Benzo(ghi)perylene	Vinylidene Chloride
Chrysene	Methylene Chloride
Dibenzo(a,h)anthracene	Toluene
Fluoranthene	Trichloroethylene, TCE
Fluorene	Vinyl Chloride
Indeno(1,2,3-cd)pyrene	Xylenes, Total
Naphthalene	
Phenanthrene	
Pyrene	
Methylnaphthalenes	

VOLATILE ORGANIC COMPOUNDS (USEPA METHOD 8240)

COMPOUNDS	
1,1-Dichloroethane	Carbon Disulfide
1,1-Dichloroethene	Carbon Tetrachloride
1,1,1-Trichloroethane	Chlorobenzene
1,1,2-Trichloroethane	Chloroethane
1,1,2,2-Tetrachloroethane	Chloroform
cis-1,2,-Dichloroethene	Chloromethane
trans-1,2-Dichloroethene	cis-1,3-Dichloropropene
trans-1,3-Dichloropropane	Dibromochloromethane
1,2-Dichloroethane	Ethylbenzene
1,2-Dichloropropane	Methylene Chloride
2-Butanone	Styrene
2-Chloroethylvinylether	Tetrachloroethene
2-Hexanone	Trichlorofluoromethane
4-Methyl-2-Pentanone	Toluene
Acetone	m-, p-, & o-Xylene
Benzene	trans-1,3-Dichloropropene
Bromodichloromethane	Trichloroethene
Bromoform	Vinyl Chloride
Bromomethane	

PRIORITY POLLUTANT METALS (USEPA METHOD 6000 AND 7000 SERIES)

COMPOUNDS	
Antimony	Mercury*
Arsenic	Nickel*
Beryllium	Selenium
Cadmium*	Silver
Chromium*	Thallium
Copper*	Zinc*
Lead*	

DRAFT

03/09/99

Page 9

Target Analytes from:

Former Sodium Disposal Facility: Final Risk Assessment, 1997, Rocketdyne,

VOCs

BENZENE
BROMOBENZENE
BROMOCHLOROMETHANE
BROMODICHLOROMETHANE
BROMOFORM
BROMOMETHANE
SEC-BUTYLBENZENE
TERT-BUTYLBENZENE
CARBON TETRACHLORIDE
CHLOROBENZENE
CHLOROETHANE
CHLOROFORM
CHLOROMETHANE
O-CHLOROTOLUENE
P-CHLOROTOLUENE
CUMENE
P-CYMENE
1,2-DIBROMO-3-CHLOROPROPANE
DIBROMOCHLOROMETHANE
1,2-DIBROMOETHANE
DIBROMOMETHANE
1,2-DICHLOROETHANE
1,3-DICHLOROETHANE
1,4-DICHLOROETHANE
DICHLORODIFLUOROMETHANE
1,1-DICHLOROETHANE
1,2-DICHLOROETHANE
1,1-DICHLOROETHENE
CIS-1,2-DICHLOROETHENE
TRANS-1,2-DICHLOROETHENE
1,2-DICHLOROPROPANE
1,3-DICHLOROPROPANE
SEC-DICHLOROPROPANE
1,1-DICHLOROPROPENE
CIS-1,3-DICHLOROPROPENE
TRANS-1,3-DICHLOROPROPENE
ETHYLBENZENE
HEXACHLOROBUTADIENE
METHYLENE CHLORIDE
N-BUTYLBENZENE
N-PROPYLBENZENE
NAPHTHALENE
STYRENE
1,1,1,2-TETRACHLOROETHANE
1,1,2,2-TETRACHLOROETHANE
TETRACHLOROETHENE
TOLUENE
1,2,3-TRICHLOROETHANE
1,2,4-TRICHLOROETHANE
1,1,1-TRICHLOROETHANE
1,1,2-TRICHLOROETHANE
TRICHLOROETHENE
TRICHLOROFLUOROMETHANE
1,2,3-TRICHLOROPROPANE
1,2,4-TRIMETHYLBENZENE
1,3,5-TRIMETHYLBENZENE
VINYL CHLORIDE
M/P-XYLENE
O-XYLENE

SVOCs

ACENAPHTHENE
ACENAPHTHYLENE
ANTHRACENE
BENZO(A)ANTHRACENE
BENZO(A)PYRENE
BENZO(B)FLUORANTHENE
BENZO(G,H,I)PERYLENE
BENZO(K)FLUORANTHENE
BENZOIC ACID
BENZYL ALCOHOL
BIS(2-CHLOROETHOXY)METHANE
BIS(2-CHLOROETHYL)ETHER
BIS(2-CHLOROISOPROPYL)ETHER
BIS(2-ETHYLHEXYL)PHTHALATE
4-BROMOPHENYL PHENYL ETHER
BUTYL BENZYL PHTHALATE
CARBAZOLE
4-CHLORO-3-METHYLPHENOL
4-CHLOROANILINE
2-CHLORONAPHTHALENE
2-CHLOROPHENOL
4-CHLOROPHENYLPHENYL ETHER
CHRYSENE
DI-N-BUTYL PHTHALATE
DI-N-OCTYL PHTHALATE
DIBENZO(A,H)ANTHRACENE
DIBENZOFURAN
3,3'-DICHLOROENZIDINE
2,4-DICHLOROPHENOL
DIETHYL PHTHALATE
DIMETHYL PHTHALATE
2,4-DIMETHYLPHENOL
4,6-DINITRO-2-METHYLPHENOL
2,4-DINITROPHENOL
2,4-DINITROTOLUENE
2,6-DINITROTOLUENE
FLUORANTHENE
FLUORENE
HEXACHLOROBENZENE
HEXACHLOROCYCLOPENTADIENE
HEXACHLOROETHANE
INDENO(1,2,3-CD)PYRENE
ISOPHORONE
2-METHYLNAPHTHALENE
2-METHYLPHENOL
4-METHYLPHENOL
N-NITROSO-DI-N-PROPYLAMINE
N-NITROSODIPHENYLAMINE
2-NITROANILINE
3-NITROANILINE
4-NITROANILINE
NITROBENZENE
2-NITROPHENOL
4-NITROPHENOL
PENTACHLOROPHENOL
PHENANTHRENE
PHENOL
PYRENE
2,4,5-TRICHLOROPHENOL
2,4,6-TRICHLOROPHENOL

PCBs

AROCLOR-1016
AROCLOR-1221
AROCLOR-1232
AROCLOR-1242
AROCLOR-1248
AROCLOR-1254
AROCLOR-1260

METALS

ARSENIC
CHROMIUM
COPPER
LEAD
MERCURY
NICKEL
ZINC

EPA 8015

HIGH BOILING PETROLEUM HYDROCAR
LOW BOILING PETROLEUM HYDROCAR

2,3,7,8-TCDF

TOTAL TCDF

1,2,3,7,8-PECDF

2,3,4,7,8-PECDF

TOTAL PECDF

1,2,3,4,7,8-HXCDF

1,2,3,6,7,8-HXCDF

1,2,3,7,8,9-HXCDF

2,3,4,6,7,8-HXCDF

TOTAL HXCDF

1,2,3,4,6,7,8-HPCDF

1,2,3,4,7,8,9-HPCDF

TOTAL HPCDF

TOTAL OCDF

TCDD-TEQ (Total detected)

Polynuclear Aromatic Hydrocarbons

2-Chloroethyl vinyl ether

1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dibromo-3-chloropropane
1,2-Dichlorobenzene
1,2-Dichloroethane
1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
1,1,2-Trichlorotrifluoroethane (Freon 113)^(h)
1,1,1,2-Trichloroethane
1,1,2,2-Tetrachloroethane
Acetone
Benzene
Bromodichloromethane
Bromoform
Bromomethane
Carbon tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
Chlorotrifluoroethylene
Chlorofluoroethylene

Chlorotrifluoroethane
cis-1,2-Dichloroethene
Dichlorodifluoromethane (Freon 12)
Ethylbenzene
Methyl Ethyl Ketone
Methylene chloride
Xylene (Total)
Tetrachloroethene
Toluene
Trimethylbenzene
trans-1,2-Dichloroethene
trans-1,3-Dichloropropene
Trichloroethene
Trichlorofluoromethane (Freon 11)^(h)
Vinyl chloride

Acenaphthylene
Acenaphthene
Anthracene
Benzo(a)anthracene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(g,h,i)perylene
Benzo(a)pyrene
Chrysene
Dibenz(a,h)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-cd)pyrene
Naphthalene
Phenanthrene
Pyrene
bis(2-ethylhexyl)phthalate
di-n-butylphthalate
diethylphthalate
N-nitrosodimethylamine (NDMA)⁽ⁱ⁾
N-nitrosodiphenylamine

Dimethyl hydrazine
Hydrazine
Monomethyl hydrazine

Octahydro-1,3,5,7-Tetranitro-1,3,5,7-
Tetrazocine (HMX)
Hexahydro-1,3,5,-Trinitro-1,3,5-Triazine
(RDX)

DRAFT SCOPE OF WORK

The goals for the proposed assessment include:

1. Review and summarize evidence relevant to any past and present contamination originating from the site which might have reached the surrounding community.
2. Identify data gaps about community exposure which might be filled and estimate the cost for doing so.
3. Determine the feasibility of establishing past and present exposures in the community from the site. If possible, describe those exposures.
4. Determine the feasibility of clarifying the public health significance of any exposures.
5. Develop with the advisory committee an agreement on the parameters that should be used to determine the feasibility of doing a community epidemiological study and the criterion to be used to decide if the feasibility is sufficient to recommend a study.
6. After examining the parameters and applying the criterion, provide an opinion on whether an epidemiological study is advisable.

The Rocketdyne Advisory Committee, a group of community stakeholders, environmental and/or occupational health scientists, will select the consultant to conduct the exposure assessment and develop health study criteria. The criteria for selection of the consultant as determined by the Rocketdyne Advisory Committee will include: the proposal demonstrates a level of effort commensurate with the intended use of the assessment as well as the consultant's qualifications in the relevant technical areas, related project experience, and cost. The EHIB will administer the contract. The CDHS and the Rocketdyne Advisory Committee has final authority over the exposure assessment and health study criteria content and quality.

Areas of Concern for the Exposure Assessment

The community exposure assessment follows the release of a recent worker health study conducted at the site. This study found an association with radiation doses and cancer mortality. For that study, worker exposure information was available from personal monitoring of radiation and industrial hygiene records (results of chemical study to be inserted here). The success of a community health study depends on good understanding of exposure.

The exposure assessment is intended to evaluate the historical operation as well as the continued operation of the facility. Some of the areas of concern with regards to community exposures should include, but not be limited, to the following:

1. Daily, controlled and accidental air releases from the nuclear reactors operated on site between the 1950s and 1980s.
2. Daily and accidental air releases from the other operations that have existed on the site in the past.

DRAFT SCOPE OF WORK

relevant experience, specific identification of radiation assessment descriptions if not covered by the preceding.

2. Scope of work for the exposure assessment, including discussion of the following:

- Exposure assessment workplan outline
- Procedure for reviewing data usability
- Identification of data gaps
 - Feasibility of modeling exposures where data gaps exist
 - Identification of additional field work that would fill data gaps
- Development of conceptual site models
- Characterization of the population that received each particular exposure
- Methodology for exposure assessment and toxicity assessment
- Approaches to fate and transport modeling
- Approach to uncertainty analysis

3. Scope of work for the health study criteria development, including discussion of the following:

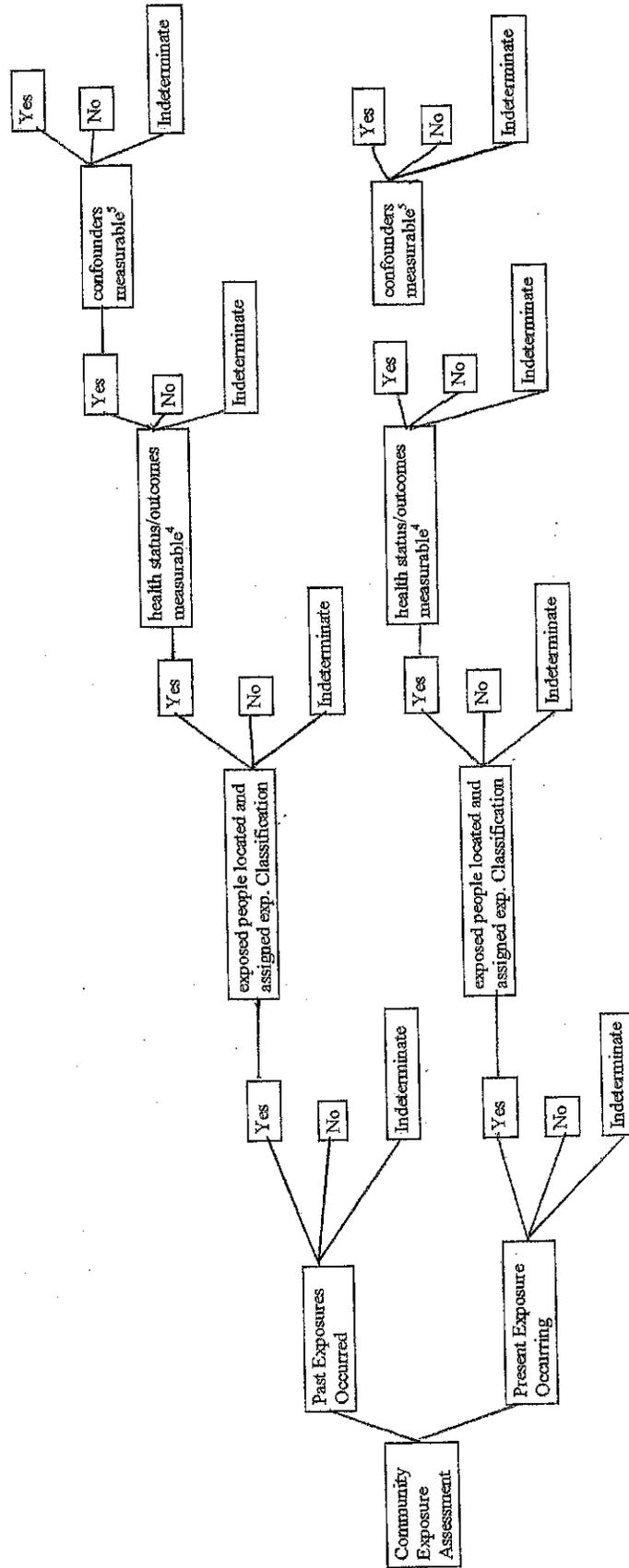
- Health study criteria workplan outline
- Procedure for choosing criteria factors
- Procedure for evaluating criteria factors
- Explanation of dependency and independency of exposure assessment and health study criteria

4. Description of necessary project meetings with the advisory panel, and the community relations philosophy and expertise of the staff assigned to work with the advisory committee in this controversial area.
5. Schedule for completion of all tasks.
6. Proposed budget.

Decision Tree for Conducting an Epidemiological Study

Question: Did Rocketdyne activities result in exposures to surrounding community members that are associated with health states/outcomes?

Assumption: To provide an epidemiological response to the question one must determine: a) exposures (and preferably gradients of exposure); b) locations of people exposed; c) health states/outcomes of people in different exposure categories; d) other exposures and characteristics which might cause similar health states/outcomes and are unevenly distributed in the surrounding community (i.e. epidemiological confounders).



1. There are a range of chemicals and radionuclides to consider.

2. How good must the documentation of exposure be?

3. Can we trace all the former residents? What portion of exposed people must be identified and located to have enough study power?

4. There are a range of health states/outcomes to consider. What are the toxicologic likelihoods of the health states/outcomes? How severe should the outcome be to warrant a study (e.g., rash vs. cough vs. diarrhea vs. cancer, etc.)

5. How likely will it be to measure confounders?

If responses to these criteria lead to a decision to conduct an epidemiological study of specific exposure(s) and health state(s)/outcomes(s), the results themselves may be positive, non-positive or inconclusive. It may be worthwhile to consider hypothetical outcomes from past and/or present exposures and the action(s) or other results (e.g., lawsuit, regulatory fine, validation of some worries).

DEPARTMENT OF HEALTH SERVICES

2151 BERKELEY WAY
BERKELEY, CA 94704-1011

(510) 622-4905

December 18, 1998

Barry L. Johnson, M.D.
Associate Administrator
Agency for Toxic Substances and Disease Registry
1600 Clifton Road, MS E-28
Atlanta, GA 30333

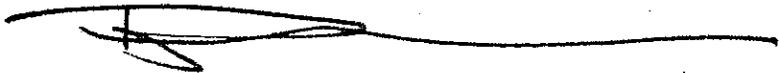
RE: ROCKETDYNE SITE IN SANTA SUSANA, CALIFORNIA.

Dear Dr. Johnson:

As you know, the California Department of Health Services (CDHS) has been overseeing a Department of Energy (DOE) funded occupational health study at the Rocketdyne site in Santa Susana, California. On the basis of a positive association between radiation exposure and cancer among Rocketdyne workers, our advisory committee has suggested what amounts to an ATSDR-style Public Health Assessment of the site to determine if there is enough documentation of sufficient past or present exposure to warrant an epidemiological study of the general population.

Our department does not have the resource to redirect to this activity, and unfortunately there are some people in the community who do not trust the Department to do such an assessment. We are willing to oversee a qualified contractor to carry out such an assessment in conjunction with a credible advisory committee including those members of the existing committee who wish to remain active. DOE has told us that they only fund such activities through ATSDR. We are costing out this activity now. Our preliminary impression is that the review of existing evidence could easily cost \$300,000 and the staffing of the advisory committee could be another \$150,000. We understand that this year's budget is going to be very tight. Is there any possibility that you would be able to fund such an activity?

Sincerely



Raymond R. Neutra, M.D., Dr.P.H., Chief
Division of Environmental and Occupational
Disease Control

cc: R. Kreutzer (CDHS-EHIB)
M. Underwood (CDHS-EHIB)



Fax Cover Sheet

From:	TOM KELLY WASTE MANAGEMENT DIVISION
Organization:	US EPA REGION 9
Phone Number:	415-744-2070
Fax Number:	415- 538-5053

To:	Clem Welsh	
Phone Number:	(510) 622-4496	
Fax Number:	(510)622-4505	

Date:	1/5/98
Number of Pages Including Cover Sheet:	

Note:	
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

December 8, 1998

**OFFICE OF THE
REGIONAL ADMINISTRATOR**

Honorable Dianne Feinstein
U.S. Senate
Senate Office Building
Washington, DC 20510-0504

Dear Senator Feinstein:

Thank you for your letter of October 27, 1998 concerning EPA's involvement at the Boeing North American Incorporated, Rocketdyne Division, Santa Susana Field Laboratory (SSFL). In response to your letter, my staff has advised me of the following:

EPA Activities

EPA recently agreed with the U.S. Department of Energy (DOE) on a schedule for an EPA radiation survey of Area IV to verify that the site can be released for unrestricted use. (EPA criticized a similar Rocketdyne effort [Area IV Radiological Characterization Study, August 15, 1996] in a April 8, 1997 letter and asked Rocketdyne to complete a new survey in a July 11, 1997 letter.) This survey will be conducted by EPA's Radiation and Indoor Environments National Laboratory in Las Vegas, with funding primarily from DOE. The first part of the survey will begin in the year 2000. It will cover the majority of Area IV, except the locations that DOE and Rocketdyne are actively cleaning up through their building Decontamination and Decommissioning program. We are extremely pleased that DOE and Rocketdyne have suggested this unique approach of allowing EPA to conduct the final survey of Area IV. This work is much more extensive than EPA had originally planned, when we agreed, in the enclosed November 8, 1996 letter, to increase our involvement in the radiation cleanup.

With regard to EPA oversight of individual building releases (the building Decontamination and Decommissioning process), we have kept the SSFL Workgroup apprised of our progress. To date, we have reviewed Decontamination and Decommissioning "dockets" for five buildings released by DOE. After reviewing the dockets, we requested, and have received, additional information from DOE. We have not yet completed our review, but expect to within a month. Also within a month, we expect to provide the Workgroup with plans for EPA surveys within the released buildings.

Community Health Study

Your letter also asked EPA to investigate possible cancer risks to the community from the SSFL. EPA understands the community's desire for a definitive and comprehensive evaluation of their health concerns related to the SSFL, however, we do not typically perform community health evaluations. That responsibility falls to the Agency for Toxic Substances Disease Registry (ATSDR). ATSDR is EPA's sister federal public health agency under the U.S. Department of Health and Human Services (DHHS).

ATSDR and the California Department of Health Services (DHS) have been working under a cooperative agreement to evaluate the SSFL. EPA has been and continues to coordinate with these regulatory agencies. We have enclosed a letter from DHS to members of the Advisory Panel for the Worker Health Study, dated November 19, 1998. It provides background on DHS' activities related to the SSFL.

The Worker Health Study is being funded by DOE, completed by UCLA and overseen by an independent advisory panel. While EPA has not been involved in the study, we do receive reports on its progress. It is designed to evaluate the cancer mortality among workers from exposures to low-level ionizing radiation and specific chemicals. The initial portion of the investigation on radiation exposure has been completed and released to the public in September 1997. The chemical exposure portion is underway and has not been completed, but is expected to be released early next year. Based on the radiation exposure portion of the Worker Health Study, the Advisory Panel recommended a "review of the feasibility of performing a follow-on study of the neighboring community." The November 19th letter from DHS to the Advisory Panel indicates that ATSDR was unwilling to fund the work. We have asked ATSDR to clarify the reasons for its conclusion.

While the first phase of the Worker Health Study found that Rocketdyne employees who received a relatively higher dose of radiation demonstrated an increased risk of dying from some forms of cancer, this finding is not necessarily relevant to the community near the site. The radiation exposure portion of the Worker Health Study neither supports nor refutes the need for a broader community health study. In addition, the methods used to assess worker health impacts -- personal radiation monitoring data and company records of occupational medical exams -- will not be available to assess the community impacts. Despite these facts, EPA believes it would be prudent to conduct an exposure assessment or feasibility evaluation for a community health study (after completion of the Worker Health Study.)

EPA believes it is wise to review the Worker Health Study in its entirety, before designing a feasibility study for a more broad-based community health study or an exposure assessment. The data and findings from the worker health study will hopefully

identify exposure data and mortality information that are critical to performing a broad-based community health evaluation.

EPA also wishes to reaffirm that we are not aware of any contamination from the SSFL that poses an unacceptable risk to the community. However, we are continually re-evaluating that conclusion as new information becomes available, like the Bell Canyon Area Soil Sampling Report dated October 1998, which EPA and other agencies are currently reviewing. Prior off-site sampling efforts, in 1992 and 1994, focused on the site's northern perimeter. Samples were collected by Rocketdyne, DHS and EPA. Workplans for sampling were presented to the public and SSFL Workgroup members. The sampling confirmed the presence of radioactive contaminants on Brandeis-Bardin Institute property, but at levels that do not pose a threat to human health. We have enclosed a July 1995 EPA Update that provides information about that sampling.

Next Steps

As we have discussed with your staff, their assistance would be helpful in facilitating the following meetings: (1) a discussion between EPA, your office and state and local officials about issues raised in your letter of October 27, 1998; (2) an additional discussion with the members of the SSFL Workgroup on refinements to the Workgroup's continued operation (we look forward to the resumption of regular workgroup meetings after these two meetings); and (3) an exploration of whether to conduct an exposure assessment or a feasibility study for a community health study and who should conduct it. We believe that the third meeting should involve senior officials of the appropriate state and federal agencies, legislators, available members of the Worker Health Study Advisory Panel. In our opinion, these meetings would help to ensure continued progress towards the remediation of the Rocketdyne SSFL site and effective communication of that progress to the community.

We appreciate your interest on this matter. If we can provide further clarification, please call Sunny Nelson, my Congressional Liaison Officer, at (415) 744-1562.

Yours,



Felicia Marcus
Regional Administrator



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street

San Francisco, CA 94105-3901

NOV 28 1996

Daniel Hirsch, Barbara Johnson,
Sheldon C. Plotkin, Ph.D. and Jerry Raskin, Ph.D.
Rocketdyne Cleanup Coalition
c/o Committee to Bridge the Gap
1637 Butler Avenue, Suite 203
Los Angeles, CA 90025

Dear Mr. Hirsch, Ms. Johnson, Dr. Plotkin and Dr. Raskin:

I am writing to let you know that EPA will increase its oversight of the Department of Energy (DOE) and Rocketdyne in their investigation and cleanup of on-site radioactive contamination at the Santa Susana Field Lab (SSFL). We are taking this action in response to your July 10, 1996 letter and requests made at the September 24, 1996 Workgroup meeting and following discussions with DOE and Rocketdyne. We are currently developing our oversight plan; the specific activities that we are currently planning are described below.

First, regarding the involvement of Gregg Dempsey, please be aware that he now supervises a staff of twenty. Gregg is the Director of EPA's Center of Environmental Restoration Monitoring and Emergency Response, with the Radiation and Indoor Environments National Laboratory in Las Vegas. We plan to involve Gregg's staff whenever our oversight tasks correspond with their capabilities. Depending on Gregg's availability, we will try to have him attend workgroup meetings to explain the work of his staff.

Since EPA has not previously been involved in the on-site investigation and cleanup of radioactive contamination at the SSFL, our first step will be to review existing information. We will send a request to DOE and Rocketdyne for additional information on Rocketdyne's Energy Technology and Engineering Center. We will review not only the results of their investigations, but the procedures used for sample collection, the quality assurance and quality control performed as part their work. Once we have reviewed that information, we can better decide on the specific activities to conduct.

One of the tools available to us is a scanner van. The van continuously measures gamma radiation from nearby soils. By driving the van over all accessible portions of Area IV, EPA can check the results obtained by Rocketdyne in its recent Area IV Radiological Characterization Survey. Where the terrain is inaccessible to the scanner van, we would use hand held instruments to measure gamma radiation levels. Greg Dempsey's staff operates the scanner van. We will make every attempt to have Gregg present the results of surveys conducted by his staff to the Workgroup.

The other aspect of the work that EPA will be able to oversee is the Decontamination and Decommissioning (D & D) program. After reviewing available information, we plan to prioritize our oversight activities of the D & D program. We plan to survey three buildings. We have not yet decided on the specific tools, meters and sampling equipment that we will use to accomplish this task. Based on the results of these initial surveys, EPA will decide how or whether to conduct further surveys. Prior to conducting our surveys, we will submit our plans and procedures to the workgroup. Your comments and input are welcome at each step of the process. We also invite you to attend the surveys we conduct.

EPA's funding for these activities appears to be adequate at this time, but you should be aware that DOE and Rocketdyne have offered to fund EPA activities related to our oversight. EPA's oversight is not contingent on accepting money from DOE or Rocketdyne. Nonetheless, additional funding would be helpful to EPA. Acceptance of funding would not in any way obligate EPA to DOE or Rocketdyne. Additionally, EPA would make any such agreements available to you. However, before deciding whether to pursue any such additional funding, or what type of funding arrangement is appropriate, we would like to have your thoughts and those of the community.

EPA's reason for overseeing the on-site investigation and cleanup is to validate the work conducted by DOE and Rocketdyne. While we expect to verify the adequacy of the cleanup of specific buildings and areas, we cannot duplicate all the measurements and samples that have already been taken by Rocketdyne, DOE's independent contractor and the Department of Health Services.

At the quarterly meeting of the SSFL Workgroup, following the November 13, 1996 meeting, EPA expects to lay out a time line for our work. We may not be able to answer every question about EPA's oversight at the November 13 workgroup meeting, but we have answered the primary question from the last meeting. EPA will conduct oversight of the on-site radiation cleanup. We look forward to meeting with all of you again and discussing EPA's future activities at the SSFL.

We hope that this response addresses your concerns about independent oversight of DOE and Rocketdyne. We will continue to keep Felicia Marcus advised of our activities. If you have any questions about this letter please contact Tom Kelly at (415) 744-2070 or Vicky Semones at (415) 744-2184. If you prefer, you can leave a message for Vicky or Tom at our toll free number, (800) 231-3075, and they will return your call as soon as possible.

Sincerely,



Julie Anderson, Director
Waste Management Division

cc: Senator Barbara Boxer
Senator Dianne Feinstein
Steve Lafflam, Rocketdyne
Roger Liddle, DOE
Phil Chandler, DTSC
Edgar Bailey, DHS
James Ross, RWQCB
Felicia Marcus, U.S. EPA
Gregg Dempsey, U.S. EPA, RIENL

9/1



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street

San Francisco, CA 94105-3901

NOV 28 1996

Daniel Hirsch, Barbara Johnson,
Sheldon C. Plotkin, Ph.D. and Jerry Raskin, Ph.D.
Rocketdyne Cleanup Coalition
c/o Committee to Bridge the Gap
1637 Butler Avenue, Suite 203
Los Angeles, CA 90025

Dear Mr. Hirsch, Ms. Johnson, Dr. Plotkin and Dr. Raskin:

I am writing to let you know that EPA will increase its oversight of the Department of Energy (DOE) and Rocketdyne in their investigation and cleanup of on-site radioactive contamination at the Santa Susana Field Lab (SSFL). We are taking this action in response to your July 10, 1996 letter and requests made at the September 24, 1996 Workgroup meeting and following discussions with DOE and Rocketdyne. We are currently developing our oversight plan; the specific activities that we are currently planning are described below.

First, regarding the involvement of Gregg Dempsey, please be aware that he now supervises a staff of twenty. Gregg is the Director of EPA's Center of Environmental Restoration Monitoring and Emergency Response, with the Radiation and Indoor Environments National Laboratory in Las Vegas. We plan to involve Gregg's staff whenever our oversight tasks correspond with their capabilities. Depending on Gregg's availability, we will try to have him attend workgroup meetings to explain the work of his staff.

Since EPA has not previously been involved in the on-site investigation and cleanup of radioactive contamination at the SSFL, our first step will be to review existing information. We will send a request to DOE and Rocketdyne for additional information on Rocketdyne's Energy Technology and Engineering Center. We will review not only the results of their investigations, but the procedures used for sample collection, the quality assurance and quality control performed as part their work. Once we have reviewed that information, we can better decide on the specific activities to conduct.

One of the tools available to us is a scanner van. The van continuously measures gamma radiation from nearby soils. By driving the van over all accessible portions of Area IV, EPA can check the results obtained by Rocketdyne in its recent Area IV Radiological Characterization Survey. Where the terrain is inaccessible to the scanner van, we would use hand held instruments to measure gamma radiation levels. Greg Dempsey's staff operates the scanner van. We will make every attempt to have Gregg present the results of surveys conducted by his staff to the Workgroup.

identify exposure data and mortality information that are critical to performing a broad-based community health evaluation.

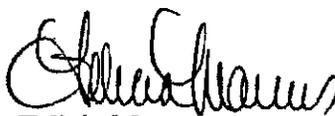
EPA also wishes to reaffirm that we are not aware of any contamination from the SSFL that poses an unacceptable risk to the community. However, we are continually re-evaluating that conclusion as new information becomes available, like the Bell Canyon Area Soil Sampling Report dated October 1998, which EPA and other agencies are currently reviewing. Prior off-site sampling efforts, in 1992 and 1994, focused on the site's northern perimeter. Samples were collected by Rocketdyne, DHS and EPA. Workplans for sampling were presented to the public and SSFL Workgroup members. The sampling confirmed the presence of radioactive contaminants on Brandeis-Bardin Institute property, but at levels that do not pose a threat to human health. We have enclosed a July 1995 EPA Update that provides information about that sampling.

Next Steps

As we have discussed with your staff, their assistance would be helpful in facilitating the following meetings: (1) a discussion between EPA, your office and state and local officials about issues raised in your letter of October 27, 1998; (2) an additional discussion with the members of the SSFL Workgroup on refinements to the Workgroup's continued operation (we look forward to the resumption of regular workgroup meetings after these two meetings); and (3) an exploration of whether to conduct an exposure assessment or a feasibility study for a community health study and who should conduct it. We believe that the third meeting should involve senior officials of the appropriate state and federal agencies, legislators, available members of the Worker Health Study Advisory Panel. In our opinion, these meetings would help to ensure continued progress towards the remediation of the Rocketdyne SSFL site and effective communication of that progress to the community.

We appreciate your interest on this matter. If we can provide further clarification, please call Sunny Nelson, my Congressional Liaison Officer, at (415) 744-1562.

Yours,



Felicia Marcus
Regional Administrator

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY

PETE WILSON, Governor

DEPARTMENT OF HEALTH SERVICES

2151 BERKELEY WAY
BERKELEY, CA 94704-1011
(510)622-4500



November 19, 1998

SAME LETTER SENT TO THE ATTACHED LIST

Jack Geiger, M.D.
The City University of New York Medical School
The City University of New York Medical School
Department of Community Health and Social Medicine
138th Street and Covenant Avenue, Room J920
New York, NY 10031

Dear Dr. Geiger:

The Advisory Panel (AP) has played a crucial role in overseeing studies of work site exposures and worker health risks at the Rocketdyne facility. At the public meeting held September 11, 1997, where increasing blood, lymph and lung cancer mortality to progressively higher radiation-exposed workers was described, many community members voiced their opinion that the surrounding communities have had exposures to Rocketdyne emissions and wastes, and that a community health study is warranted. In response, the AP (at the suggestion of Drs. Alice Stewart and Jack Geiger) recommended first conducting an examination of potential exposure and then determining the utility and feasibility of an epidemiological study.

As chief of the Environmental Health Investigations Branch (EHIB) of the California Department of Health Services, I asked my staff to begin assembling an inventory of studies and data which might be used to determine if a reconstruction of exposures via air, ground water, surface water or transportation through the community was possible. As is our usual practice, we also talked to many of you and to other community members to assess the representation of community interests. In addition, we conferred with several federal agencies to see if they would be willing to fund a feasibility study.

On March 13, 1998, EHIB staff conferred by phone with Dr. James Cone and Larry Billick of the California Occupational Health Program, AP co-chairs, Dan Hirsch and Dr. David Michaels, and AP members, Sheldon Plotkin, Frank Mirer, and Noah Seixas. Our intent was to report on our efforts to locate additional resources to carry out some of the exposure assessment steps outlined above and to work together on a strategy for obtaining those resources. We indicated that the Department of Energy was unequivocal in denying us funds for off-site exposure assessment, ongoing advisory committee meetings and ongoing community work. Furthermore, representatives of the Agency for Toxic Substances and Disease Registry (ATSDR) and the Center for Environmental Health (CEH) had verbally expressed an unwillingness to support this work.

Advisory Panel Members

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While Dr. Michaels was comfortable with the efforts made by my staff to begin the exposure assessment process and to locate funding sources, Mr. Hirsch was adamant that he did not want EHIB involved in the exposure assessment process. He also was upset that we had explored obtaining additional funding without the AP's "authorization". Given the different positions of the AP members present, we suggested that the advisory committee as a whole should be consulted on these questions. We indicated that we would want the AP recommendations for additional action in writing so as to reduce potential for confusion. We decreased our activity on this site while awaiting clarification from the advisory committee. Since then, we have received no communications.

I am writing to clarify what we see as the main issues related to our role in this matter and what we plan to do by your next meeting. First, we do not have the staff time to review all the available material and determine the feasibility of reconstructing past community exposures or carrying out epidemiological studies. Second, Mr. Hirsch has made it clear that he would not like us to perform this function even if we had the staff or received special funds to augment our staff. Third, we have no problem with the idea of a qualified contractor carrying out these tasks similar to the way UCLA conducted worker studies. Fourth, if a contractor was selected, there would need to be fiscally qualified oversight of the contract for this work (including the design, conduct and reporting of the results of the feasibility study). This oversight must maximize stakeholder and scientific input. Our Department and the Public Health Institute coordinated oversight for the occupational studies. We are open to discussing a continuation of that role as well as other options. It is not clear to us which members of the AP wish to continue into this next phase. Additional expertise may be needed. Fifth, while some or all stakeholders may not want our Department to play a major role in this next phase, we have a responsibility to be involved and have the relevant expertise to contribute to the project, if only as outside commentators.

By the next meeting we will:

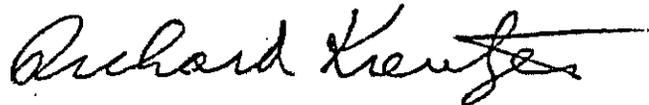
- 1) Poll each member of the AP to solicit their opinions about DHS's role in community exposure and health considerations;
- 2) Poll each member of the AP for suggestions on environmental relevant expertise, if any, to be added to the AP;
- 3) Poll each member of the AP to determine their willingness to continue serving on the AP if funds are found to carry out a feasibility study;
- 4) Prepare an inventory of documents from various agencies which are relevant to the reconstruction of exposures through air, water, etc.;
- 5) Prepare a draft schematic scope of work and workload for a hypothetical contract for your review and comment and a description of what we think would be needed oversight activities;
- 6) Resume exploration of possible federal funding of the feasibility study.

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One of my staff will be contacting you during November and December to obtain your opinions on these matters and to determine your expectation for continuing as an advisory panel member into the next phase.

Thank you for your dedication to these important issues and your assistance in helping my group formulate a responsible public health plan. I look forward to future discussions and collaboration.

Sincerely,



Richard Kreutzer, M.D., Chief
Environmental Health Investigations Branch

cc: Dr. Raymond Neutra, Chief
Division of Environmental and Occupational Disease Control
5801 Christie, Suite 600
Emeryville, CA 94608

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California Occupational Health Branch
1515 Clay Street, Suite 1800
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Dr. James Cone, Chief
California Occupational Health Branch
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Oakland, CA 94612

Mr. Larry Bilick
California Occupational Health Branch
1515 Clay Street, Suite 1800
Oakland, CA 94612

The Honorable Sheila Kuehl
Member of the Assembly
State Capitol
Sacramento, CA 95814

Advisory Panel Members

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cc: **The Honorable Cathie Wright**
Member of the Senate
State Capitol
Sacramento, CA 95814

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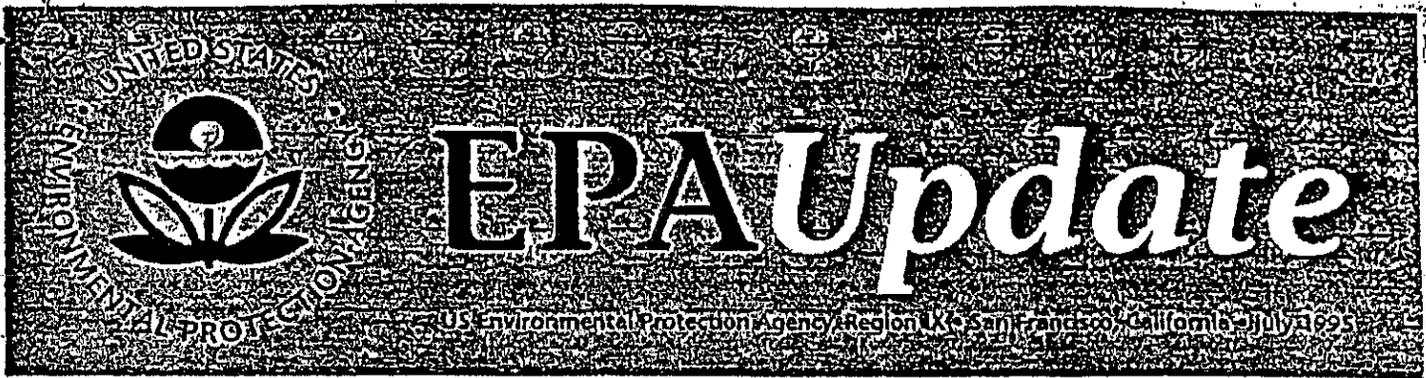
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The U.S. EPA Announces Results of Rocketdyne's Off-Site Sampling Program for the Santa Susana Field Laboratory

The U.S. Environmental Protection Agency (EPA) has completed its review of Rocketdyne's "Off-Site" Study. Rocketdyne initiated the study to find out if past operations at its Santa Susana Field Laboratory (SSFL) contaminated areas next to the site. The study focused on the Brandeis-Bardin Institute and the Santa Monica Mountains Conservancy's Sage Ranch Park (Figure 1). It confirmed the presence of radionuclides (radioactive elements) in two areas near the SSFL on Brandeis-Bardin property. Specifically, Rocketdyne found Tritium, a radioactive form of hydrogen, and Cesium in one area and Strontium in another; however, EPA has determined that the radionuclides do not pose a threat to human health or the environment.

The Brandeis-Bardin Institute is a Jewish educational center also used for camping, hiking and horseback riding. Sage Ranch Park is used as a wildlife habitat, as open space, and for hiking and camping. These two areas are downhill from the SSFL where contamination would travel with rainfall runoff.

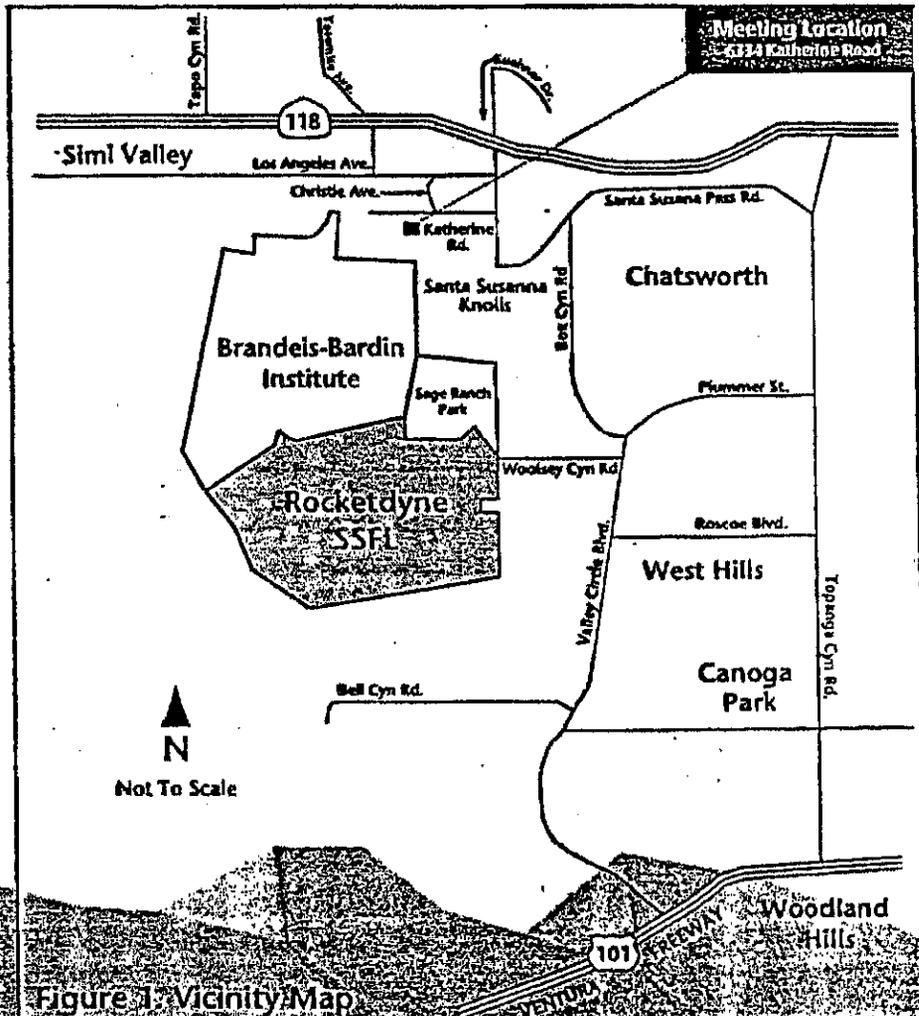


Figure 1: Vicinity Map

Special Notice

As most of you are aware, newspapers have reported that investigators from the FBI and other federal agencies, including the EPA, removed environmental documents from Rocketdyne's Santa Susana Field Laboratory. Because the investigation is ongoing, neither EPA nor Rocketdyne will be able to comment on it at our next workgroup meeting. The last page of this factsheet provides the time and date for the next meeting to discuss environmental issues about the SSFL.

Initial Off-Site Sampling

Rocketdyne began its off-site study in 1992 by collecting and analyzing 118 soil samples, seven surface water samples, four groundwater samples from two wells, and nine fruit samples. This initial study looked for both chemical and radionuclide contamination. It included many procedures to assure the quality of the study's results, such as analyzing duplicate samples. In addition to Rocketdyne's own quality assurance program, EPA, California Department of Health Services (Cal DHS) and Brandeis-Bardin independently analyzed more than 40 samples that Rocketdyne also analyzed.

Besides sampling potentially contaminated areas, Rocketdyne sampled areas, called background areas, which were unaffected by their operations. These background areas are located from 1.5 to 13 miles from the site. As expected, even the background areas contained low levels of some radionuclides. However, this background radiation comes from naturally occurring radionuclides and worldwide fallout from above-ground nuclear weapons testing. The study compared background samples with samples taken from Brandeis-Bardin and Sage Ranch Park to determine the impact of Rocketdyne's past operations.

The initial study found that Trichloroethylene (TCE), a nonradioactive industrial solvent, had contaminated the groundwater beneath Sage Ranch Park (see Figure 2). Rocketdyne already monitors

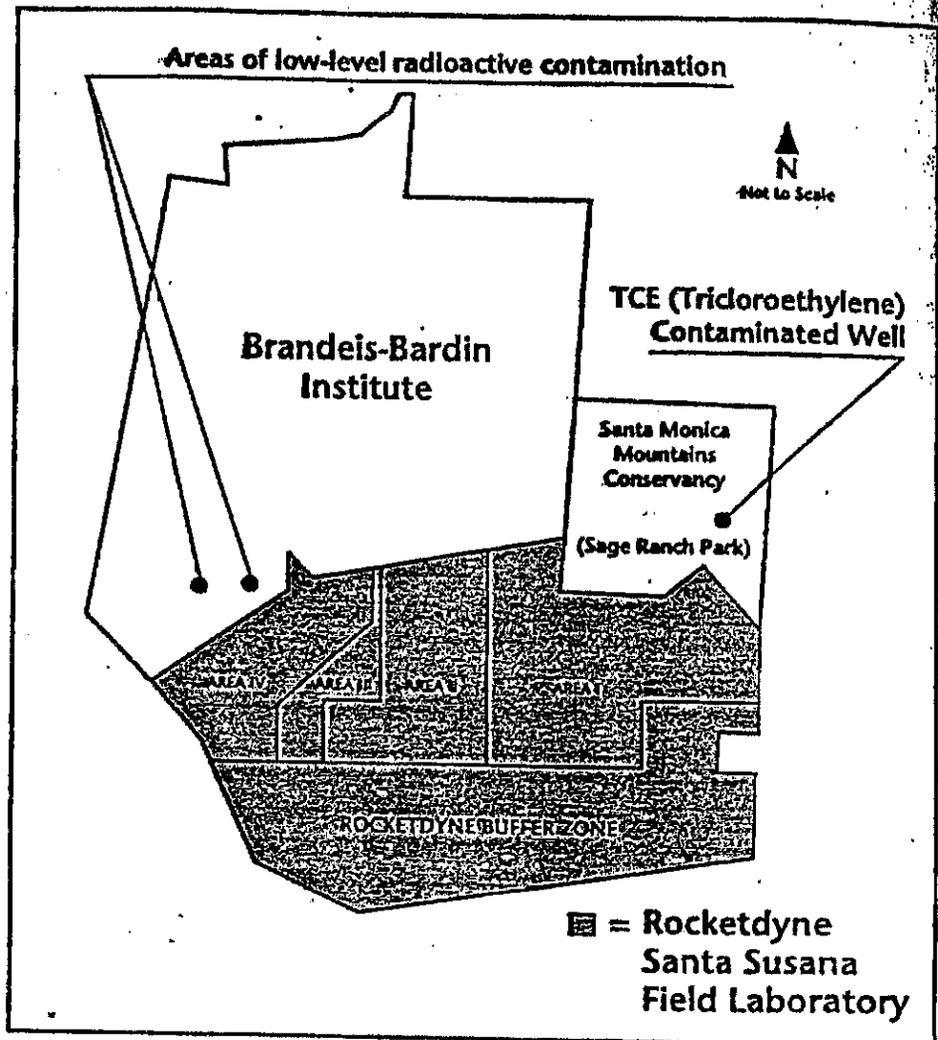


Figure 2. Site Map

and cleans up TCE-contaminated groundwater within the SSFL. Consequently, Rocketdyne decided to address the contamination through its existing program with the oversight of the California Department of Toxic Substances Control (DTSC). Rocketdyne also found mercury in the soil on Brandeis-Bardin near the Rocketdyne site boundary, and lead contamination at Rocketdyne's employee skeet shooting range on Sage Ranch Park. Since this study, Rocketdyne has removed the contaminated soil by excavating it from both

areas and shipping it off-site for proper disposal. Rocketdyne confirmed that it had removed all of the contaminated soil by resampling the areas after excavation.

The results of the study also identified a number of areas with low level radionuclides, but the study could not conclude whether they resulted from SSFL operations or were background levels. To resolve this, Rocketdyne agreed to take more samples, again in cooperation with EPA, Cal DHS, and Brandeis-Bardin.

EPA Update

U.S. Environmental Protection Agency, Region IX, San Francisco, California, July 1995

Additional Soil and Water Sampling

The additional sampling focused on radionuclide contamination. As part of its additional sampling, Rocketdyne collected more than 120 soil samples and two additional surface water samples in March of 1994. Rocketdyne also collected an additional 40 background samples from eight different areas, in addition to resampling background areas from the initial study. This time, EPA, Cal DHS, and Brandeis-Bardin independently analyzed 54 samples collected by Rocketdyne.

Results and Conclusions

The additional study identified two impacted areas. These areas, or watersheds, are downhill from Rocketdyne facilities that caused the contamination. The first facility, Building 59, formerly housed a developmental nuclear reactor. The second, the Radioactive Materials Disposal Facility (RMDF), was used primarily for packaging and shipping radioactive waste off-site for treatment or disposal. For this study, the soil concentrations were measured in picoCuries per gram of

soil (pCi/g) or per liter of water (pCi/L) contained within the soil.

Table 1 lists the concentrations of radionuclides in each impacted area, corresponding local background concentrations and typical concentrations for uncontaminated (except from worldwide fallout) areas throughout the United States. Although the impacted areas are above the local background levels, they are below typical levels found throughout the United States.

Furthermore, based on EPA's calculations, the theoretical cancer probability or risk to campers and camp counselors is less than EPA's threshold level for action of one in 1,000,000. A one in 1,000,000 risk means that one potential excess cancer case might occur if one million people were exposed to the contamination for long periods of time. EPA's calculation is based on two scenarios: (1) children camping one month a year for four years directly on the area of contamination and (2) camp counselors walking through the contamination repeatedly for ten years. For a more thorough discussion of the risk posed by the contamination, EPA encourages

you to attend the meeting on August 10. See the last page of this update for more information on the meeting.

For tritium, EPA has yet to approve a test method to measure soil concentrations in pCi/g. Consequently, Rocketdyne measured tritium in pCi/L, which indicates the amount of tritium in water extracted from surface soil. For comparison purposes, EPA's existing standard for tritium in drinking water is 20,000 pCi/L. The water contained within this soil is not drinking water, but even if it were, the contamination would not exceed EPA's standard for tritium.

What's Next

DTSC issued a post-closure permit to Rocketdyne in April of this year. A post-closure permit is required for facilities that close certain hazardous waste management units, if the facility cannot fully clean up chemical contamination at the units. As required by the post-closure permit, Rocketdyne is continuing to cleanup and monitor solvent-contaminated groundwater. Furthermore, it requires Rocketdyne to complete a site-wide study of

Table 1. A Comparison of Radionuclide Concentrations

Radionuclide	Sampling Area on Brandeis-Bardin	Average Soil Concentration	Average Local Background Concentration	Typical U.S. Background Concentration
Strontium	RMDF Watershed	0.03 pCi/g	0.052 pCi/g	0.7 pCi/g
Cesium	Bldg 59 Watershed	0.20 pCi/g	0.087 pCi/g	0.7 pCi/g
Tritium	Bldg 59 Watershed	2,250 pCi/L	140 pCi/L	100-300 pCi/L

EPA Update

U.S. Environmental Protection Agency, Region IX, San Francisco, California, July 1995

chemical contamination, called a Resource Conservation and Recovery Act (RCRA) Facility Investigation. DTSC is currently reviewing Rocketdyne's RCRA Facility Investigation Workplan.

In addition, Rocketdyne is continuing a program of "decontamination and decommissioning" to cleanup buildings and areas that handled radioactive material, such as reactors, test facilities, and storage areas. This program includes post-cleanup surveys to verify the effectiveness of its actions. Rocketdyne is completing a radiological survey of on-site areas surrounding the facilities where nuclear work took place. This survey will look for radioactive contaminants that may have been carried with rainfall runoff away from radiological facilities.

Background

The SSFL is located in eastern Ventura County and covers an area of nearly 2,700 acres. Rocketdyne has divided the SSFL into four administrative areas (Area I, II, III, and IV) and a buffer zone. Rocketdyne owns most of Area I and Areas III and IV. Rocketdyne operates the Energy Technology and Engineering Center (ETEC) at Area IV for the Department of Energy (DOE). Area II and a 42-acre parcel of Area I are owned by the National Aeronautics and Space Administration (NASA).

The SSFL was established in 1946. Throughout the years, Rocketdyne has tested rocket engines at the site. During the 1950s, Rocketdyne expanded site operations to include nuclear energy research

and nuclear reactor development for DOE. Work with nuclear materials, conducted in Area IV, included fabrication of nuclear fuels, testing of nuclear reactors, and disassembly and analysis of used fuel elements. Except for the investigation and cleanup of contaminated facilities, no nuclear work has occurred since 1988.

Information Repositories

Reports describing both the initial study and the additional investigation can be found at the Simi Valley Public Library and at the Urban Archives Center of the Oviatt Library, California State University, Northridge. The studies are titled "Multi-Media Sampling Report for the Brandeis-Bardin Institute and the Santa Monica Mountains Conservancy" and "Additional Soil and Water Sampling at the Brandeis-Bardin Institute and Santa Monica Mountains Conservancy." The Santa Monica Mountains Conservancy is Sage Ranch Park. The Conservancy oversees the park for the State of California.

For More Information Contact:

Tom Kelly
EPA Project Officer
(415) 744-2070

Vicky Semones
Community Relations
Coordinator
(800) 321-3075

For more information on the post-closure permit, the groundwater cleanup, or the RCRA Facility Investigation, contact Julio Narvaez, DTSC, at (818) 551-2923.

Next Meeting of the SSFL Workgroup*

Date: Thursday, August 10
Time: 6:00 pm
Location: Knolls Elementary School, 6334 Katherine Rd.,
Simi Valley, CA.

Tentative Agenda

(Neither the EPA nor Rocketdyne can comment at this meeting on the FBI's on-going investigation.)

1. Further Discussion of the Risk Posed by Off-Site Contamination (EPA)
2. Status Report of ETEC's On-Site Investigation Activities (ETEC)
3. The Proposed Site Treatment Plan for Radioactive/hazardous Waste (DOE)
4. Update on the Worker's Health Study of Former Rocketdyne Employees

The SSFL Workgroup consists of federal and state regulatory agencies, four public representatives, the Department of Energy and Rocketdyne. The SSFL Workgroup meets regularly to share information on environmental issues related to the site. The public is welcome and encouraged to attend all Workgroup meetings.

To: Joe Munso
Via: James Stratton
From: Division of Environmental and Occupational Disease Control
Raymond Richard Neutra MD Dr.PH.

April 23, 1999

RE. Action Needed to Move Rocketdyne, Boeing/ Santa Suzana Field Laboratory (SSFL)
Process Forward

PROBLEM: Despite the fact that they asked Governor Davis to insert \$150,000 for SSFL in the DHS budget, Ventura/Los Angeles legislators have not clarified, what, if any role they want Department of Health Services to play in Community Health/Exposure Study around SSFL site near Simi Valley. They have focussed on the scientific work to be done and want the existing oversight/advisory committee to control that, but they seem unaware of the substantial facilitative work that needs to be done and haven't specified who is to be responsible for that. They share with the community activists the belief that DHS staffs are too cozy with Boeing SSFL and its interests. Decisions about the budget and the way to administer it cannot be made until responsibility for facilitative and fiscal functions are clarified.

RECOMMENDED ACTION: Mr. Johnson or other Davis appointee should confer with DHS staff and convene the following people to:

- 1) review sources of conflict between DHS , activists and the legislators during the first phase which examined worker health
- 2) Discuss ways to avoid this conflict in the next phase which will evaluate health threats, if any, in neighborhoods surrounding the site.
- 3) Discuss options for facilitative functions such as naming new scientific experts to the panel, finalizing and releasing requests for proposal, drafting contracts with the contractor, maintaining day to day scientific oversight of any contractors, reaching out to stakeholders, staffing the panel, paying panel members their hourly fee and expenses, drafting layperson summaries of results, handling mailings and press releases about the results. DHS and its contractors filled these functions in the first phase. Other options should be considered as well. One, favored by staff is to turn the funds over to the Senate Office of Research and contract out all the facilitative functions. DHS could continue only by having one representative to the Panel.

The persons to invited should include:

- 1.Co-Chairs and members of the SSFL Advisory/Oversight Panel
- 2.Current County and State elected officials from the area.
- 3.Mr. Richard Katz and Judge Terry Friedman who were involved in defining the role of DHS at the beginning of the process in the early 1990s and who retain an interest.
4. Dr John Froines and Dr. Hal Morgenstern who did the recently completed UCLA study and can comment on their view of DHS' role and behavior.
5. DHS officials including Doctors Neutra, Harrison and Kreutzer.

BACKGROUND

The bowl valley at the top of the ridge of hills which separates San Fernando and Simi valleys has been used as a rocket engine testing facility and DOE nuclear reactor experimental station since the late 1940's.

Since the late 1970's Mr. Dan Hirsch of the Committee to Bridge the Gap and others, have been concerned about chemical and radioactive contamination on the site and the possibility of chemical and radioactive release from the site into neighborhoods in the increasingly populated areas around this site.

In the early 1990's neighborhood fears of cancer to the east of the hill, lead to cancer registry tabulations suggesting an increased rate of bladder cancer. Then Representative Katz held a hearing that severely criticized DHS for not actively studying the problem. With input from Representatives Katz, Terry Friedman and now Senator Cathy Wright a committee was formed of citizens named by the representatives. DHS has staffed this committee. With agreement from the legislators and the citizen representatives DHS staff advertised for scientists who would provide a majority vote. DHS staff and the citizens chose two candidates for each category of scientist and the then director of DHS, Dr. Molly Coye made the final choice of scientist for each category.

DHS had the understanding that the Panel had control of the formulation of the Request for Proposal and the choice of the research team to carry out a worker health study. The Panel was also free to interpret the results of the study to the general community. If there were demonstrated worker health problems the feasibility of evaluating community health threats from the site would be carried out. DHS assumed that it was responsible for the budget, for involving other stakeholders, for interpreting the results to the workers and expressing its own opinion to the general public as well.

In exercising what it thought was its facilitative prerogative DHS staff (Dr. Harrison) experience^d the following conflicts with Mr. Hirsch

- 1) Mr. Hirsch did not want the majority vote to be controlled by the scientists
- 2) Mr. Hirsch disagreed with the majority vote to select the UCLA team to do the work
- 3) Mr. Hirsch and a majority but not all of the Panel did not want to pursue the usual DHS and National Institute of Occupational Safety and Health (NIOSH) tri-partite procedure of sharing research draft results for comment by management, labor and government. They wanted to exclude Rocketdyne/Boeing from the loop. Dr. Harrison viewed this vote as advisory not binding. Senator Wright Assemblymember Katz and Assemblymember Kuehl shared Mr. Hirsch's outrage at this procedure. (Despite this outrage, everyone now agrees that the process worked. The UCLA researchers benefited from comments received and did not allow themselves to be unduly influenced by the comments. Despite the fact that it worked, Hirsch and the legislature are against the tri-partite procedure as a matter of principle)

In September 1997 the first worker study was released which showed an association between radiation levels previously thought safe, and increased leukemia and other cancers. The panel recommended a study of the feasibility of doing a health study in the community.

When DHS staff in the Environmental Health Investigations Branch (EHIB) under Dr. Kreutzer began exercising what they thought of as their facilitative responsibility by contacting the advisory/oversight committee, exploring federal funding etc. Mr. Hirsch and the legislators had the following objections:

- 1) DHS should not seek funds for a feasibility study
- 4) DHS should not communicate with the Panel Members except through Mr. Hirsch and the Co-Chair (who had resigned to go to DOE)
- 5) DHS should not prepare proposals to the Panel on what a draft RFP might look like
- 6) DHS should have no contacts with Rocketdyne to see if their offer to fund studies could be accepted without strings and in a way acceptable to the Panel and the legislators.
- 7) DHS should make no recommendations as to the kind of additional scientific expertise need by the panel as it shifted from a worker to a neighborhood focus.

Between September 1997 when the Panel recommended that a feasibility study be carried out, and April 1999 it had taken no official action to implement its recommendation other than to obtain funding for its continuance through the legislature. Governor Wilson vetoed this along with a number of other items not in his original budget.

On April 12th Committee to Bridge the Gap reviewed EHIB files under the Public Records Act. On the very next day Mr. Grantland Johnson received a letter from Assemblymember Kuehl alleging that DHS had suppressed a "study" showing that the area to the north and west of SSFL had elevated rates of lung cancer. She also alleged that she had evidence that EHIB staff were conniving with Boeing to stack the committee. The letter called for the dismissal of Dr. Neutra the Division Chief, Dr. Harrison from the Occupational Health Branch and Dr. Kreutzer the head of the Environmental Health Branch. Ms Kuehl had a press release on April 15 repeating these charges.

On investigating in response to Ms Kuehl's letter on April 13, Dr. Neutra discovered that the allegations represented a mis-interpretation of several documents found in the public records act search. He provided an immediate explanation and will prepare a more detailed explanation later.

On Wednesday April 21, Steve Chandler of Senator Diane Feinstein's staff convened all government agencies and representatives of interested elective officials involved with SSFL at the Region 9 headquarters of USEPA and by speaker phone. Mr. Munso, Dr Barrett and Dr. Neutra represented DHS.

Three main issues arose:

- 1) There is a need to reconcile the rationales for radiation and chemical clean up at the site between USEPA and Cal EPA on chemicals and Department of Energy (DOE) and DHS Radiation Health Section on the other hand. This may take high level intervention.

- 2) How to fund follow-up studies of SSFL workers. NIOSH and Boeing are possible funders. In either case there would be a tri-partite oversight, but the existing SSFL panel would not have a role. No action by DHS is required on this issue.
- 3) Who will manage and who will fund the community health/exposure feasibility study. The \$150,000 is not sufficient. Reviewing the voluminous documents about releases and exposures and interpreting them could easily cost \$300,000 and taking new environmental samples in air water and soil for radiation and chemicals could cost hundreds of thousands of dollars. Senator Feinstein is willing to look for federal dollars but needs state legislators and the Governor to agree about who will do the facilitative management so it is clear where the money will flow and how. Mr. Munso and Dr. Neutra agreed to convey to Mr. Grantland Johnson the desire that DHS act to resolve this issue with the involved California elected officials.

We should convene the appropriate decision makers to agree on a process for proceeding.

A solution should be found which does not compromise DHS ability to issue its own opinions and actions on matters of public health and which does not result in un-funded mandated activities.

Our goals for the community are as follows:

- 1) The community should be left with an ongoing process for interacting with Boeing and receiving and evaluating information about clean up and the ongoing operations of rocket testing.
- 2) The community will have received a thorough and unbiased accounting of current exposures and their health significance, if any.
- 3 4) If there are current health hazards in the community from SSFL they should be prevented and or removed
- 4 5) The community will have received a through and unbiased accounting of past exposures, releases and their health significance, if any.
- 5 6) The community will have received a through and unbiased evaluation of the feasibility of epidemiological studies to assess the health impacts of past or present exposures.
- 6 7) If feasible the epidemiological study should be conducted.

**SANTA SUSANA FIELD LABORATORY
EPIDEMIOLOGICAL STUDY:
REPORT OF THE OVERSIGHT PANEL**

SEPTEMBER 1997

OVERSIGHT PANEL MEMBERS

Daniel Hirsch, Co-Chair *

Committee to Bridge the Gap, Los Angeles, California

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SANTA SUSANA FIELD LABORATORY EPIDEMIOLOGICAL STUDY: REPORT OF THE OVERSIGHT PANEL

Background

The epidemiological study of Santa Susana Field Laboratory (SSFL) workers was triggered out of two concerns: that workers on-site may have been affected by workplace exposures to radioactive and chemically hazardous materials and that releases of such materials from the facility may have harmed members of the neighboring community. SSFL operated nuclear reactors, handled plutonium and conducted rocket-engine tests. The events leading up to the establishment of the study included disclosures of a number of accidents involving nuclear reactors on the property, radioactive and chemical contamination affecting both on- and off-site areas, and a preliminary study suggesting elevated incidences of certain cancers in census tracts closest to the facility which, although not definitive, pointed to the need for a full-scale investigation. Since SSFL workers were expected to have higher exposures to the relevant radioactive and chemical materials than the nearby general population, it was decided that the appropriate next step was a detailed epidemiological study of the workers. If the study concluded there was no risk to workers, the issue of potential impacts on the neighboring community could also be put to rest. If the study did find deaths among the workers attributable to their exposures, additional follow-up study of the neighboring community might be in order.

The first phase of the worker study, dealing with potential impacts from exposure to radiation, is now complete. The second part of the worker study, dealing with chemical exposures, will be released at a later time. (Some analyses of chemical exposures are contained in the current study, but they are restricted to assessing whether such exposures could be a confounding variable with regard to radiation.)

The Oversight Panel

The study was performed by a team of researchers from UCLA and was overseen by an Oversight Panel. Five members of the Oversight Panel were selected by local legislators as community representatives. Four of the community representatives have technical backgrounds in safety engineering, physics, nuclear policy, and medicine. An additional seven members of the Panel were selected by the California Department of Health Services (DHS). Their backgrounds include community medicine, environmental science, industrial hygiene, and epidemiology. DHS had and has certain regulatory involvement in the site. The U.S. Department of Energy (DOE) – for whom part of SSFL was operated by Rocketdyne – provided a (non-voting) representative as well. An additional member of the Panel, British radiation epidemiologist Dr. Alice Stewart, was added to the Panel after its formation, upon the suggestion of the Panel itself. The Panel is co-chaired by Daniel Hirsch of the Committee to Bridge the Gap and David Michaels of the City University of New York Medical School. A complete list of the Panel members is included on page *i* of this report.

The Study's Findings

The primary question the study was designed to answer was whether workers at Rocketdyne/AI's nuclear sites have experienced excess deaths from cancer associated with their work-related exposures to radiation. The answer is yes.

The study found:

- Exposure of workers at SSFL to external (penetrating) radiation was associated with an elevated rate of dying from cancers of the blood and lymph systems and from lung cancer.
- Cancer death rates for all cancers and for "radiosensitive" solid cancers were found to increase as external radiation dose increased.

- Increased doses of internal radiation (i.e. from radioactive materials that were inhaled or ingested) similarly resulted in increased mortality rates for blood and lymph system cancers and for cancers grouped together by the investigators as the upper-aero-digestive tract, including cancers of the oral cavity, pharynx, esophagus, and stomach. 27.3% of the cancer deaths among workers with measurable internal radiation exposures were attributable to their workplace exposures to radiation.

The study results were primarily obtained by comparing higher exposed groups to lower exposed groups of the same worker population, which provides substantial power to the conclusions. Furthermore, although it isn't possible to completely rule out the possibility of confounding effects, the study found no evidence of any factor such as smoking or chemical exposure that could be responsible for the radiation impact seen.

The study also examined several issues of broader implication regarding risks associated with radiation exposure, making the following important findings:

- Although the cancer deaths at SSFL attributable to radiation exposure were dose-related, they occurred at doses substantially below those considered permissible by official U.S. and international regulatory bodies, thus raising questions about the adequacy of current regulations.
- The excess relative risk of "low-dose" radiation was at least 6 to 8 times greater than risks previously assumed on the basis of atomic bomb survivor data.
- There is an age effect – *e.g.*, older adults (over 49 years old) are more at risk from radiation than younger ones for all cancers and for "radiosensitive" solid cancers, including lung cancers.¹

The SSFL study lends support on many of these points to recent work by Steve Wing, and George Kneale and Alice Stewart. It is noteworthy that many of the important findings of the SSFL study could be made because of the long follow-up period – permitting the detection of long-latency cancers that appear

many years after radiation exposure, which might have been missed in studies with shorter follow-up times, as well as permitting a better view of any age effect. This strongly argues for continued follow-up not only of the SSFL workers but of all radiation-exposed cohorts at other nuclear-related facilities, including many in which no or few effects had been found in studies of shorter follow-up duration.

Recommendations by the Panel

Based on the results of this phase of the study, the Panel recommends:

1. Follow-Up

a. The chemical phase of the study, examining whether exposure to hazardous materials resulted in deaths among the worker population, should be completed as soon as possible. We urge Rocketdyne and its new Boeing management to undertake every effort to provide all available data that would help to evaluate such exposures.

b. The Rocketdyne workers should continue to be followed. One of the advantages of the current study, giving it enhanced power despite the relatively small numbers of monitored workers relative to other studies, is the long follow-up period. Since only a small fraction of the monitored Rocketdyne workforce has yet died, additional, long-latency effects of the workplace exposures may yet be seen. Continued follow-up of the workers – indeed, both from SSFL and studies at other nuclear sites – should be undertaken.

c. A review of the feasibility of performing a follow-on study of the neighboring community should now be undertaken. As indicated above, one of the reasons for the establishment of the worker epidemiological study, in addition to concern for the workers themselves, was concern expressed by members of the surrounding community about possible harm from releases from the site. Since the worker study found radiation exposures did result in cancer deaths among the worker population, we recommend evaluation of the feasibility of performing a carefully constructed community study. The Panel will meet to explore this issue and report to the community regarding the need and feasibility of such a study. We recommend, if such a study is found feasible,

that it be conducted under the oversight of the Panel and by a contractor selected by the Panel, as was the case with the SSFL worker study.

2. Recommendations of Broader Application

a. The study makes several findings that call into question whether current regulatory exposure limits are sufficiently protective, and we recommend that regulatory bodies revisit their standards in light of the SSFL study and other recent studies that reached similar conclusions.

i. Nuclear workers are currently permitted to receive 5 Rem (also called 50 mSv) each year, the equivalent of 150 Rem (1500 mSv) over a 30-year career. The SSFL study, and several other large recent studies of radiation-exposed workers, have found evidence of cancers occurring from radiation at levels significantly lower than this regulatory limit. In light of these findings, we recommend that the current limits for radiation exposure be reconsidered by all regulatory and advisory bodies responsible for radiation protection.

ii. The SSFL study also found the excess relative risk from "low-dose" external radiation is at least 6 to 8 times greater than that assumed by current official risk factors which are based on extrapolation of the results of A-bomb survivor data to low doses. This finding of the SSFL study is in concordance with similar recent studies by Wing, *et al.*, and Stewart and Kneale and lends support for the premise that extrapolations from the Hiroshima/Nagasaki experience are not the appropriate basis for setting protective standards for workers or the general public.² In light of the finding in the SSFL and other recent studies that "low-dose" radiation may be a considerably more potent carcinogenic agent than presumed in current regulatory assumptions, we recommend consideration of these new studies by standard-setting bodies and the potential need to strengthen radiation protection regulations.³

iii. The study also confirmed a previously reported age-effect. Current regulatory standards are based on the presumption that radiation risk is essentially constant throughout adulthood. The SSFL study found, for a number of cancer types, that the risk increases with age at exposure. Regulatory

standards based on the assumption of uniform risk throughout adulthood should be re-examined.

b. Finally, we have a comment regarding the process of conducting epidemiological studies in controversial areas such as those involving Department of Energy nuclear facilities. Because of the troubled history of many past DOE studies, which has affected public confidence in their findings, the SSFL study operated under an innovative structure designed to involve the community in the study's oversight and assure the scientific integrity of the work by maintaining independence from either governmental or corporate interests responsible for the exposures and outcomes under investigation. While these efforts have not been entirely successful, nor always easy, we believe that establishment of Oversight Panels such as ours can be a useful model in attempting to enhance public confidence in such studies.

Oversight Panel's Conclusions Regarding the SSFL Study

- The UCLA research team was selected by the Oversight Panel after review of applications from all research groups who responded to an open Request for Proposals. The review included evaluation of the methods to be used and the analysis proposed to be performed.
- The UCLA team conducted the study according to those protocols and generally accepted research methods for studies of this type. The UCLA team reported periodically to the Oversight Panel in writing and in person.
- The principal limitations of the study were shortages of detailed exposure data and delays in access to information. These limitations do not compromise the Oversight Panel's confidence in the findings of adverse effects of radiation exposure.
- The Oversight Panel has confidence in the principal findings of the study.

- The Oversight Panel urges Rocketdyne, the U.S. Department of Energy, the California Department of Health Services, and other appropriate agencies to provide funding and access to data as required for completion of the chemical effects portion of the study, and other work as necessary.
- This study and the Oversight Panel's recommendations that flow from it should be brought to the attention of national and international bodies responsible for setting standards for radiation protection.

ENDNOTES

¹ For cancers of the blood and lymph systems, the study found an age effect in the other direction, with workers under the age of 50 more at risk.

² Some researchers have argued that the A-bomb data are skewed by a "healthy survivor" effect that would lead to an underestimate of radiation effects if extrapolated to a general population. The "healthy survivor" argument is that people with weaker immune systems were killed disproportionately by the original atomic explosions, so that the survivors are an unrepresentative group. The effect of radiation on the survivors, thus, would be partially masked by the fact that there was a bias in their selection, *i.e.*, greater resistance. This "healthy survivor" effect could explain why the SSFL study, the Wing et al. study of workers at Oak Ridge, and the Stewart and Kneale studies all indicate a radiation risk about an order of magnitude greater than estimates derived from the A-bomb survivors. We do not here pass judgment on this hypothesis, except to note that it provides a biologically plausible explanation for the finding in this and other recent studies of a larger number of cancer deaths attributable to radiation exposure than would be predicted from official risk estimates based on the A-bomb survivor data.

³ Some groups have recently proposed relaxing official assumptions about the risks of "low-dose" radiation, arguing that standards that flow from them are too restrictive. See, *e.g.*, January 1996 proposal by Health Physics Society. These proposals appear ill-advised in light of the SSFL and other recent studies that indicate that, if anything, current standards underestimate radiation risks.

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