



Rocketdyne Inquiry

SUMMARY OF FINDINGS AND REPORT

Prepared by
**Cal/EPA, Department of Toxic
Substances Control**

August 1999

SUMMARY OF FINDINGS

Governor Gray Davis, in a letter dated May 3, 1999, directed California Environmental Protection Agency (Cal/EPA) Secretary Winston Hickox to conduct an independent investigation of allegations that California Department of Health Services (DHS) personnel improperly withheld a 1997 cancer registry study of communities within Los Angeles County near the Rocketdyne Santa Susana Field Laboratory (SSFL) test site.

The allegations were raised by Assemblymember Sheila Kuehl in a letter dated April 13, 1999 to Health and Human Services (HHS) Secretary Grantland Johnson. Cal/EPA Secretary Winston Hickox directed Edwin F. Lowry, Director of the Department of Toxic Substances Control (DTSC), to conduct the independent inquiry. The Cal/EPA Secretary asked that the inquiry respond to Secretary Johnson's request for a "thorough and independent review of Assemblymember Sheila Kuehl's concerns..." A summary of those concerns have been identified and listed below with the findings of this special inquiry.

Question #1: Did DHS personnel suppress or withhold a September 1997 Tri-Counties cancer registry analysis (1997 Nasser Report) from investigators employed in UCLA worker health studies or the worker health Advisory Panel engaged in oversight activity?

Finding: There appears to have been no intent by DHS staff to suppress or withhold the 1997 Nasser Report. The DHS Cancer Surveillance Section properly followed its own guidelines in receiving and considering the 1997 Nasser Report. The DHS Cancer Surveillance Section failed, however, to take further action as required for "unusual aggregations of cancers" because the medical epidemiologists in the DHS Cancer Surveillance Section and the Environmental Health Investigations Branch did not believe the results were significant or unusual. Although the scientific evidence is not entirely clear, the weight of DHS epidemiological opinion and independent epidemiological evaluation by DTSC staff supports the conclusion that the 1997 Nasser Report did not disclose an unusual cancer aggregation.

There appears to be an organizational failure in that the DHS Environmental Health Investigations Branch did not distribute or share the 1997 Nasser Report with other potentially interested parties. The report apparently was not shared with the UCLA worker study investigators or the DHS Occupational Health Branch,

nor was it given to the Rocketdyne worker health Advisory Panel. The report was not circulated within DHS beyond the Environmental Health Investigations Branch staff members Drs. Richard Kreutzer and Peggy Reynolds.

Question #2: Did DHS personnel conspire with, or act at the suggestion of, Rocketdyne's employees or subcontractors to terminate or change the membership of the worker health Advisory Panel funded by the United States Department of Energy (DOE) to oversee the 1991-1999 worker health studies?

Finding: In the period from 1997-1998, Rocketdyne was actively lobbying both the DHS Occupational Health Branch staff and the Environmental Health Investigations Branch staff to change the membership and authority of any future community health advisory panel. It is unknown if this lobbying caused DHS to change its behavior towards the worker health Advisory Panel members.

Commencing in 1996, the relations between the members of the worker health Advisory Panel and DHS Occupational Health Branch section chief Dr. Robert Harrison appears to have deteriorated to the point where DHS staff from both the Occupational Health Branch and the Environmental Health Investigations Branch made decisions independent of the Rocketdyne organization to end the policy and procedural control exercised by the worker health Advisory Panel.

The record supports the view that DHS allowed the worker health Advisory Panel to expire on its own terms and did not actively seek a new role for the existing worker health Advisory Panel members in planned community health studies until the expiration of the DOE worker health study contract was imminent.

Question #3: Did DHS Occupational Health Branch personnel impermissibly share draft UCLA worker health study results with the management of the Rocketdyne SSFL facility?

Finding: The DOE worker health contract gave nearly unprecedented control to the worker health Advisory Panel over the worker health studies. DHS violated the "collaborative" spirit, if not the terms of this contract, when it released the June 1997 and January 1999 draft worker health studies over the strong and explicit objections of the Advisory Panel. (See Exhibit K.)

Question #4:

Did DHS Environmental Health Investigations Branch personnel fail in their statutory and professional duty to commence community epidemiological health studies at and near the Rocketdyne SSFL facility after learning of cancer data from the 1990 Los Angeles census tract study, the 1992 DHS study, the 1997 UCLA worker health study and/or the 1997 Nasser Report?

Finding:

The California Health and Safety Code charges DHS with the duty to conduct special health and epidemiological investigations as to the causes of cancer. DHS failed in its duty to conduct such studies, or in the alternative, to articulate to the public a reason why such studies were inappropriate. DHS epidemiological staff did not believe the objective medical and epidemiological evidence justified an expensive commitment of existing resources to a new and extensive community health study. This view was not adequately articulated to the public. DHS staff were unwilling to change historic DHS health program priorities to fund Rocketdyne SSFL area community health studies.

DHS Environmental Health Investigations Branch staff unreasonably delayed the planning and funding of Rocketdyne SSFL area community health studies. In mitigation, there was insufficient new state or federal funding to add staff to conduct the community epidemiological health studies sought by local residents and legislators from areas surrounding the Rocketdyne SSFL. It was unfortunate that DHS did not communicate to the Legislature and the public the basis for its decision making.

ROCKETDYNE INQUIRY

Section I: Scope of Inquiry

Introduction and Scope of Inquiry

Governor Gray Davis, in a letter dated May 3, 1999, directed California Environmental Protection Agency (Cal/EPA) Secretary Winston Hickox to conduct an independent investigation related to allegations that California Department of Health Services (DHS) personnel improperly withheld a 1997 cancer registry study of communities within Los Angeles County near the Rocketdyne Santa Susana Field Laboratory (SSFL) test site. The Governor requested that the study be completed within 90 days.

On May 4, 1999, Cal/EPA Secretary Hickox directed Edwin F. Lowry, Director of the Department of Toxic Substances Control (DTSC) to commence an investigation of issues posed by the Governor and raised in consultation with Grantland Johnson, Secretary for the Health and Welfare Agency.

The DTSC inquiry formally began on June 14, 1999, under the direction of Special Assistant Harold Thomas and Chief Investigator Mary Locke. Mr. Thomas is a lawyer with an extensive enforcement background in pollution response and control. Ms. Locke has been a criminal investigator with the State of California for almost 20 years. A preliminary technical review was conducted by Myrto Petreas of DTSC's Hazardous Materials Laboratory under the direction of Bob Stephens, Ph.D., Deputy Director, DTSC, Science, Pollution and Prevention and Technology Program. (See Appendix V for text of the technical review.)

In addition to a review of the written record, this inquiry included interviews of key individuals. During almost 10 years of interaction between members of the Legislature, the community and DHS bureaucracy, there have been many verbal understandings and agreements critical to an understanding of the Rocketdyne health issues.

The inquiry concludes with some suggested structural and institutional remedies which are intended to increase the effectiveness of state agencies charged with managing complex environmental health issues.

Background

This inquiry has reviewed the communications between state and local governmental agencies evaluating the health risks to workers and area residents surrounding the Rocketdyne Santa Susana Field Laboratory. Beginning in 1949, the Santa Susana Field Laboratory was the site of North American Aviation's laboratory for guided missile research. The facility later was the location of Atomics International which conducted research using nuclear materials. In the years 1950-1990, the Rocketdyne facility was the site of rocket engine testing, nuclear reactor research, nuclear fuel processing, laser research and energy technology research.

The issues associated with this facility are complex because, in addition to the continuing multi-agency cleanup overseen by the United States Environmental Protection Agency (U.S. EPA), the United States Department of Energy (DOE), and DTSC, there have been ongoing efforts by California Department of Health Services (DHS) to assess health risks associated with the site. DHS recently completed an occupational health study of mortality rates for Rocketdyne facility employees. The study was conducted by the UCLA School of Public Health, funded by DOE, and managed under contract between DOE and DHS's non-profit affiliate Public Health Institute (PHI). The Rocketdyne worker health study was limited in scope to occupational risks to Rocketdyne employees from exposure to radioactive and hazardous substances.

Public oversight of the Rocketdyne worker health study (1991-1999) occurred through a worker health Advisory Panel composed of scientific and community experts. That effort produced two final reports, including one study examining radiological exposure which was published in June 1997 and one study looking at chemical exposures which was published in January 1999. The DOE/PHI contract expired by its own terms on June 30, 1999.

The principal investigator on the Rocketdyne worker health study was Dr. Robert Harrison of the Occupational Health Surveillance and Evaluation Program Section (OHSEPS) of DHS. His work was reviewed and directed in part by the worker health Advisory Panel. Throughout the contract period, he was assisted by the DHS Environmental Health Investigations Branch (EHIB) and various subcontractors. The primary subcontractor for the worker health studies was the UCLA School of Public Health.

Questions and Analysis

The inquiry has considered four questions raised by correspondence from Governor Gray Davis, Senator Dianne Feinstein, Assemblymember Sheila Kuehl, and DHS Director Grantland Johnson. These questions are listed below:

- Question #1: Did DHS personnel suppress or withhold a September 1997 Tri-Counties cancer registry analysis (1997 Nasserri report) from the investigators employed in the UCLA worker health studies or the community Advisory Panels engaged in oversight activity?

- Question #2: Did DHS personnel conspire with, or act at the suggestion of, Rocketdyne's employees or subcontractors to terminate or change the membership of the worker health advisory panel funded by DOE to oversee the 1991-1999 worker health studies?

- Question #3: Did DHS Occupational Health Branch personnel impermissibly share draft UCLA worker health study results with the management of the Rocketdyne SSFL facility?

- Question #4: Did DHS Environmental Health Investigations Branch personnel fail in their statutory and professional duty to commence community epidemiological studies near the Rocketdyne SSFL facility after learning of cancer data from the 1990 Los Angeles census tract study, the subsequent 1992 DHS study, the 1997 UCLA worker health study, and/or the 1997 Nasserri census tract analysis?

Section II: Environmental Health Duties of DHS

Governing Authority of DHS

The protection of public health in California has been historically vested in local public health officers based in county government. As the State experienced growth in the first half of the century, the predecessor to the present-day DHS became the home for specialized State public health services that could not be provided, due to cost or expertise, by local health officers. Beginning in the 1940's, the management of cancer and the surveillance and assessment of disease with environmental causes were located in DHS or its predecessor department until 1991. In the first year of the Wilson Administration, reorganization transferred the Toxic Substances Control Program to DTSC and toxicological investigations functions were relocated to the newly-formed Office of Environmental Health Hazard Assessment within Cal/EPA.

The investigation by public health officials into sources of morbidity and mortality in the general population of the State is a core function of DHS (HSC§100325) and its public officials. More specifically, the governing statutes provide that DHS shall provide epidemiological assessments to identify cancer hazards to the public health and their remedies. (HSC§103875.) Pursuant to HSC §103885, DHS has established a statewide cancer reporting system. Acting through DHS subcontractors Public Health Institute (PHI) and the Santa Barbara County Health Department, contracted with Tri-Counties Regional Cancer Registry to collect and analyze reported data. (See Exhibit A.) The Cancer Research Act of 1997 (HSC §104175) added additional research oversight and administration duties to coordinate public and private research into the cause and prevention of cancer.

Independent of DHS's duty to survey residents for cancer incidence in the population at large, DHS has specific occupational health duties to investigate causes of morbidity and mortality from work-induced diseases and to maintain knowledge as to the effect of chemicals on California workers. (HSC§105175.) DHS is required to work under an MOU with the Department of Industrial Relations to maintain a data repository which "collects and evaluates toxicological and epidemiological data...that may be pertinent to establishing harmful effects on health from exposure to toxic materials." (HSC§147.2.)

DHS Organizational Structure

Activities related to the Rocketdyne worker and health issues were handled by two operational divisions within DHS. Within those two divisions, several branches and units were directly involved:

1. **Division of Environmental and Occupational Disease Control**
(Dr. Raymond Neutra, Chief)
 - Occupational Health Branch
(Dr. Ana Maria Osorio, Chief)
 - Occupational Health Surveillance and Evaluation Program
Section *(Dr. Robert Harrison, Chief)*
 - Environmental Health Investigations Branch
(Dr. Richard Kreutzer, Chief)
 - Environmental Epidemiology and Geographical
Information Section *(Dr. Peggy Reynolds, Chief)*

2. **Division of Chronic Disease and Injury Control**
(Dr. Donald Lyman, Chief)
 - Cancer Control Branch
(Dr. Dileep Bal, Chief)
 - Cancer Surveillance Section
(Dr. William Wright, Chief)
 - Research and Surveillance Program
(Mr. Robert Schlag, Supervisor)

After 1991, DHS managed the Rocketdyne worker and community health issues in two operational divisions.

Worker health issues were managed by the Occupational Health Branch (OHB) and community health and exposure issues were managed by the Environmental Health and Investigations Branch (EHIB), both of which are part of the Division of Environmental and Occupational Disease Control.

Cancer statistical data were collected and evaluated by the Cancer Surveillance Section (CSS), which is part of the Cancer Control Branch (CCB) within the Division of Chronic Disease and Injury Control (DCDIC). (See Appendix IV for DHS organizational charts.)

Various units within DHS have analyzed suspected public health impacts of operations of Rocketdyne SSFL. The work is at times cooperative, although each operational unit has independent funding and objectives.

When the public and local public health officers raised questions about elevated cancer rates, the Research and Surveillance Program of the DHS Cancer Surveillance Section was responsible for reviewing data and producing statistical analysis. Questions regarding the effects of worker exposure were investigated by the DHS Occupational Health Surveillance and Evaluation Section. Investigating the incidence or groupings of cancer incidents affecting community members alleged to have occurred as the result of releases from the Rocketdyne SSFL was the duty and the responsibility of the DHS Environmental Health and Investigations Branch. Prior to 1993, this branch was supervised by Dr. Lynn Goldman. Dr. Raymond Neutra was the supervisor in the mid-1990's and Dr. Richard Kreutzer was the supervisor during the years 1997-1999.

The record shows that, in years 1991-1998, the DHS Occupational Health Branch was actively involved with supervising the DOE funded Rocketdyne worker health studies. In contrast, after Dr. Lynn Goldman departed DHS in 1993, the DHS Environmental Health Investigations Branch appears not to have been proactive in pursuing data gathering or analytical involvement. The DHS Environmental Health Investigations Branch neither planned nor budgeted community health studies or preliminary community exposure work, but relied upon the resources of the regional cancer registry programs and the UCLA worker health study for data collection.

History of Studies At and Near the Rocketdyne Site ¹

The first analysis of cancer incidence in the area of the Rocketdyne SSFL appears to be a 1980 leukemia mortality study conducted by DHS for the Ventura County Health Officer. The data upon which the study was based came from the Ventura County Health Care Agency. The study was prepared by Dr. Donald Austin, M.D., M.P.H., Chief of the Cancer Epidemiology unit of DHS. He concluded, "These data do not provide any convincing evidence to support the hypothesis that an

¹ A complete list of health studies is attached in Appendix I.

excess of leukemia has occurred among the residents of the Thousand Oaks or Simi Valley areas." No further investigation was recommended.

In 1990, DHS cancer registry staff prepared a preliminary cancer registry report typical of the initial stage of DHS involvement. The report entitled, "Cancer Incidence Rates in Five Los Angeles County Census Tracts" was initiated at the request of Dr. Robert Holtzer from the predecessor to Environmental Health Investigations Branch (Environmental Epidemiology and Toxicology Branch. (EETB.) In this study, only bladder cancer showed a "suggestion of an elevation in the census tracts of interest." The work was primarily done by Cancer Surveillance Section staff member Carin Perkins.

In November 1991, Carin Perkins prepared an in-house draft registry analysis of Los Angeles and Ventura census tracts using 1988-1989 data. This work was limited to evaluating Proportional Incidence Rates (PIR) of cancers. The analysis showed elevated levels of "suggestively radio sensitive cancers" in one census tract within the study boundary.

In 1992, DHS Environmental Epidemiology and Geographical Information Section Chief, Dr. Peggy Reynolds, DHS Cancer Surveillance Section staff (Carin Perkins) and the local Los Angeles cancer registry, through Leslie Bernstein, followed up the 1990 study with a new inquiry entitled, "Cancer Incidence Near the Santa Susana Field Laboratory 1978-1989." The study concluded, "Analyses suggest that people living near the SSFL are not at increased risk for developing cancers associated with radiation exposure." Although there were two elevated cancers including lung and bladder, the author believed these were not caused by a "general environmental agent."

In June 1997, a group of UCLA School of Public Health investigators concluded a DOE-funded study entitled, "Epidemiologic Study to Determine Possible Adverse Effects to Rocketdyne/Atomics International Workers from Exposure to Ionizing Radiation." This study found "evidence from this study indicates that occupational exposure to ionizing radiation among nuclear workers at Rocketdyne/Atomics International has increased the risk of dying from cancers of the blood and lymph system." Further, the study concluded that, "Exposure to external radiation appears to have increased the risk of dying from lung cancer." Of interest to this inquiry, the study indicated that the lung cancer mortality "does not appear to be due to the confounding effects of smoking, asbestos or hydrazine exposures...." Finally, "This study strongly suggests that exposure to internal radiation has increased the risk of dying from cancers of the upper-aerodigestive tract."

In 1997, at the request of Ventura County Public Health Director, Paul Lorenz, the Tri-Counties Regional Cancer Registry conducted an updated cancer registry

review for an area of the Simi Valley in a five mile radius of the SSFL. The analysis identified the number of observed cancer cases and compared it against the number of expected cases. The expected ratio was based upon the number of cases found in the area of the registry which included Ventura, Santa Barbara and San Luis Obispo counties. The analysis concluded 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 and bronchus which is higher."

In January 1999, the UCLA public health investigations group produced an Addendum Report entitled "Epidemiologic Study to Determine Possible Adverse Effects to Rocketdyne/Atomics International Workers from Exposure to Selected Chemicals." The Addendum concluded that "the results of this study suggest that occupational exposure to hydrazine and/or other chemicals associated with the same rocket engine-testing jobs increased the risk of dying from lung cancer and possible other cancers in this population of aerospace workers." The study was limited in that it was based on mortality, not cancer incidence.

Section III: Questions and Analysis

Question # 1: Did DHS personnel suppress or withhold the 1997 Nasserri Report?

The act of suppression or withholding of documents requires some knowledge or intent, beyond mere negligence or inadvertence on the part of an entity or person who fails to provide documents when such a duty exists. Merely overlooking or forgetting about the existence of an important review or evidence may be a negligent act, but it is not a willful suppression of evidence.

In order to determine the validity of the charge that DHS personnel had suppressed the 1997 Nasserri Report and failed to disclose the report to the worker health Advisory Panel, DTSC examined the correspondence associated with the 1997 Nasserri Report as well as the contract documents creating the DOE-funded worker health Advisory Panel. Interviews were conducted of people the record disclosed had been involved with the 1997 Nasserri Report.

Analysis: Did DHS Cancer Surveillance Section follow its internal guidelines in considering the 1997 Nasserri Report?

The protocol for the review of citizen concerns about cancer groupings or excesses is found in the "Guidelines to Address Citizen Concerns About Cancer in their Communities" (1998) issued by the California Cancer Registry (CCR), a program within the Cancer Surveillance Section of DHS. (See Exhibit B.) The guidelines advise county health officials to refer community cancer exposure concerns to the local cancer registries for an initial assessment. Local health officials are to refer workplace exposure issues to the Occupational Health Branch of DHS.

On September 15, 1997, Ventura County Public Health Director Paul Lorenz referred community concern about the high levels of cancer occurring near the Rocketdyne SSFL facility to the local cancer registry for analysis. The CCR guidelines provide that the cancer registry's duty "is limited to an assessment of whether the cancers are unusual in comparison to the cancer that would be expected to occur." "Unusual" or "excess" cancer is the threshold for further action. (See CCR Guidelines page 2.) The assessment in response to the September 15, 1997 referral was prepared by Dr. Kiumarss Nasserri of the Tri-Counties Regional Cancer Registry (1997 Nasserri Report) and his analysis showed excess lung cancer in census tracts surrounding the Rocketdyne SSFL facility. (See Exhibit C.)

Both DHS Cancer Surveillance Section medical epidemiologist Dr. Eva Glazer and Research and Surveillance Unit Chief Dr. Robert Schlag appear to have received copies of the 1997 Nasser Report from the local cancer registry as the CCR Guidelines require. (See Guidelines, page 4.) The guidelines provide that the State Cancer Registry shall refer "any unusual aggregations of cancers to the appropriate section of DHS, or other state agency for additional review and possible investigation." (See CCR Guidelines, page 2.) Local official Kiumarss Nasser did forward his work to the state cancer registry unit where it was reviewed by medical epidemiologist Dr. Eva Glazer.

It is at this point where the subjective judgment of DHS employee Dr. Eva Glazer is important. Was the 17.2% increase in lung cancer an "unusual aggregation" or just a statistical spike of little consequence? This question was of vital concern to the community. Dr. Eva Glazer believed that the 1997 Nasser Report did not show an unusual aggregation of cancer and took no further action to investigate the matter further.

The DHS Cancer Surveillance Section did follow its internal guidelines and properly received and considered the 1997 Nasser Report. It was Dr. Glazer's professional opinion that the 17% increase over expected cancer rates was not an unusual or unexpected result.

Analysis: Did DHS Cancer Surveillance Section refer the 1997 Nasser Report to the DHS Environmental Health Investigations Branch for additional investigation? ²

Dr. Eva Glazer of the DHS Cancer Surveillance Section believes she forwarded the 1997 Nasser Report to the Environmental Health Investigations Branch as an informational item but is unable to recollect specific dates. The DHS Cancer Surveillance Section and the Environmental Investigations Branch treats information referrals differently than requests for additional investigation. Dr. Glazer apparently discussed the report with Dr. Peggy Reynolds, an epidemiologist with the Environmental Health Investigations Branch. Dr. Reynolds had extensive involvement with this site during her 1991-1992 review of cancer registry data near this facility. Dr. Glazer is clear in her recollection that she did not request the Environmental Health Investigations Branch to engage in further work. She stated, in an interview conducted on July 8, 1999, that she did not believe the 17% elevated lung cancer rate was unusual given that the analysis did not control for the effect of smoking. She indicated that between 200-300 census tracts in the Los Angeles region had lung cancer rates that exceeded the expected rate by 17% or

² Summaries of all interviews are attached in Appendix II.

more. Under questioning, she indicated her only reason for forwarding the analysis to the Environmental Health Investigations Branch was because the subject matter was "sensitive" and the cancer registry guidelines provide that the branch should be informed so as to better communicate with the public. She believed it was the duty of the local health officer who requested the data to communicate the importance of the analysis to the public, and it was not the domain of the State to interfere with the local health officers' conduct of public communications.

In an interview held on July 7, 1999, the DHS State Cancer Registry Chief Mr. Robert Schlag indicated that informal office policy was to seek the Environmental Health Investigations Branch involvement only when excessive or elevated levels of cancer were identified by the State and local cancer registry personnel. When the results of the registry research were negative or inconclusive, no further action was typically taken. It is Robert Schlag's opinion that Nasser's work concluded that there were no excessive or elevated levels of cancer identified although a plain reading of the Nasser conclusions leads a lay person to believe the 17% increase in lung cancer was indeed an exception to the report's overall findings "that residents of the study area seem to have cancer risk similar to other residents of the Tri County area."

Division Chief Dr. Raymond Neutra apparently shared Robert Schlag's interpretation of the 1997 Nasser Report data although his April 14, 1999 memo to the SSFL worker health Advisory Panel restates Nasser's conclusion that lung cancer was "significantly higher" than expected. (See Exhibit E.) Dr. Neutra is equivocal, however, in that his letter also states that the local Los Angeles County Health Officer, Dr. Russell and Cancer Surveillance Section personnel did not believe the statistics to be "suggestive" and indicated that "on a technical basis the data are not considered particularly suggestive." He also indicates that at the time of the report's release, his staff did not bring the statistics to the attention of either himself or Dr. Robert Harrison, who was the Chief of the Occupational Health Surveillance and Evaluation Program Section, and actively engaged in the Rocketdyne occupational epidemiological study conducted during the period 1991-1999.

The DHS Cancer Surveillance Section did not refer the 1997 Nasser Report to the DHS Environmental Health Investigations Branch for additional investigation but instead referred it to the Environmental Health Investigations Branch as an information item. As an information item, the referral did not require additional work unless the Environmental Health Investigations Branch chose to do additional research.

Analysis: After reviewing the 1997 Nasser Report, was the DHS Environmental Health Investigations Branch's decision to undertake no action appropriate public health policy?

A decision to refer a complaint or local cancer registry assessment to the DHS Environmental Health Investigations Branch for additional work requires data showing an "unusual aggregation of cancers." The CCR guidelines are very clear that the aggregation must be "determined to be unusual when compared to the cancers that would have been expected if the group or location in question had the same cancer rates as the underlying population." (Guidelines, page 2.)

The key question in this inquiry is why the 17.2% elevated lung cancer rate identified in the 1997 Nasser Report, when combined with the earlier June 1997 worker health study identification of excess lung cancer, was not deemed unusual or suggestive relative to the underlying population. The question is more pointed in the mind of the community, in view of the fact that the worker study was controlled for tobacco use and still found significant elevated levels of lung cancer linked to exposure to external radiation.

The level of cancer defined to be unusual or elevated appears to be a matter of debate within the medical epidemiology community. (See Exhibit D for e-mail from DHS Epidemiologist Richard Sun to DHS epidemiology staff.) Dr. Raymond Neutra, the Division Chief who supervises both the DHS Occupational Health Branch and the Environmental Health Investigations Branch is himself the author of a scientific paper expressing skepticism as to the usefulness of the type of statistical analysis found in the 1997 Nasser Report. Dr. Neutra states, "The use of traditional levels of statistical significance in the presence of occult multiple comparisons means that most of the statistically significant clusters presented to us will be chance events." In this paper, entitled "Counterpoint from a Cluster Buster" (*American Journal of Epidemiology*, July 1990), Dr. Neutra agrees the "systematic search for neighborhood aggregations of disease through the use of vital records and disease registries is a useless strategy," and ultimately concludes that "special studies should be carried out more sparingly than in the past." This is not to say that epidemiological response to perceived cancer elevations has no benefit, since it can serve as treatment device or community palliative. In Dr. Neutra's words, epidemiological investigation is "part of good, empathetic public health practice." These views appear to be shared by the DHS epidemiology staff in both the Environmental Health Investigations Branch and the Occupational Health Branch.

Assuming Dr. Neutra's scientific view that a systematic search of disease registries is a useless strategy to determine the cause of disease clusters, then the "no action"

behavior by DHS Environmental Health Investigations Branch is rational. Unfortunately, no action was not an acceptable public policy in the absence of a detailed explanation to the public residing in the vicinity of the Rocketdyne SSFL facility.

Analysis: Should the 1997 Nasser Report have been disseminated to the UCLA worker health study investigators and other community representatives?

There is agreement between the DTSC epidemiology staff and outside public health reviewers that the failure of DHS Environmental Health Investigations Branch staff to circulate the 1997 Nasser Report was inappropriate. The DTSC technical review included at Appendix V contains the independent reviewers' opinions. Interviews with DHS epidemiology staff Drs. Kreutzer and Glazer supported the view that sharing professional data is a reasonable and expected practice within the public health profession.

DHS Environmental Health Investigations Branch Chief Dr. Kreutzer was unable to provide an explanation as to why the 1997 Nasser Report was not forwarded to the UCLA investigators or the worker health Advisory Panel except to indicate that the data was not valuable or significant. He indicated that as a rule there was very little information sharing with the DHS Occupational Health Branch.

The 1997 Nasser Report should have been circulated to the all parties concerned with health studies at or near the Rocketdyne SSFL facility.

Conclusion

There appears to have been no intent by DHS staff to suppress or withhold the 1997 Nasser Report. The DHS Cancer Surveillance Section properly followed its own guidelines in receiving and considering the 1997 Nasser Report. The DHS Cancer Surveillance Section failed, however, to take further action as required for "unusual aggregations of cancers" because the medical epidemiologists in the DHS Cancer Surveillance Section and the Environmental Health Investigations Branch did not believe the results were significant or unusual. Although the scientific evidence is not entirely clear,³ the weight of DHS epidemiological opinion, and

³ This inquiry asked DTSC Epidemiologist Myrto Petreas to analyze the significance of the elevated cancer levels identified in the 1997 Nasser Report. Petreas concluded that "the results do not support the presence of any major environmental hazard." Two independent peer reviewers analyzed the Nasser data. One indicated additional scientific analysis was desirable. The other avoided the substantive health question by stating the guidelines were procedurally deficient. (See Appendix 5 and Exhibit B.)

independent epidemiological evaluation by DTSC staff supports the DHS conclusion that the 1997 Nasser Report did not disclose an unusual cancer aggregation.

There appears to be an organizational failure in that the DHS Environmental Health Investigations Branch did not distribute or share the 1997 Nasser Report with other potentially interested parties. The report apparently was neither shared with the UCLA worker study group or the DHS Occupational Health Branch, nor was it given to the Rocketdyne worker health Advisory Panel. The report was not circulated within DHS beyond the Environmental Health Investigations Branch staff members Drs. Kreutzer and Reynolds.

Question #2: Did DHS employees conspire with or act at the suggestion of Rocketdyne to terminate or revise the membership of the committee?

Formation of the 1991 Oversight Panel (Advisory Panel) ⁴

The original concept for the worker health Advisory Panel apparently came from an October 20, 1989, request from then Assemblymember Terry Friedman to Dr. Ken Kizer, Director of DHS under Governor George Deukmejian. The mission of the committee was to advise the Governor and DHS regarding "types and methodologies of studies needed to determine health effects on SSFL workers and the surrounding community." (See Exhibit I.)

The Advisory Panel was formed in 1991 to supervise and manage DOE's occupational health study. The panel was created by contract between DOE and DHS's Public Health Institute (PHI), and the panel members were appointed after negotiations between members of the legislature and the Director of DHS. (See Exhibit J.) Dr. Robert Harrison of the DHS, Occupational Health Surveillance and Evaluation Program Section was designated as the principal investigator. The committee membership was chosen nominally for its scientific and technical knowledge; however, a consideration in the choice of membership was the political affiliation and philosophical views of the community members. The choice of Advisory Panel members was important in the continuing conflict over control of DHS programs that was occurring between DHS bureaucracy and local legislators representing the SSFL area communities. After the DOE/PHI agreement was concluded, the degree of substantive contractual control afforded the worker health Advisory Panel was unprecedented for state sponsored health studies.

⁴ The DOE/PHI contract in its entirety is attached in Appendix III.

Analysis: What was the extent of the Advisory Panel's Oversight role?

The original 1991 DOE/PHI contract provided that the Advisory Panel would exercise almost complete control over many aspects of the DOE worker health project. These powers included 1) control over the selection process and choice of the outside investigators funded under the DOE grant; 2) supervision of the outside investigation during its pendency; 3) review and approval of a work plan governing all studies; 4) a work plan specify study methodology and time lines; 5) ongoing review and assessment of the progress of the investigation; 6) the ability to review and comment on all reports; 7) the power to inform the public on the process and progress of the project; and 8) approval of the final report. (See Exhibit K for a copy of the original scope of authority.) Critical to the Advisory Panel oversight was that panel members would be compensated at commercially reasonable rates and expenses would be reimbursed.

Analysis: Did DHS accept the oversight role as provided in the DOE/PHI 1991 contract?

The cooperative management structure of the Rocketdyne worker health investigations, led by a joint community-DHS-DOE advisory panel, appears to have been a source of continual conflict between the parties. Retrospective interviews with Dr. Richard Kreutzer and a review of the voluminous written record indicates that the Occupational Health Branch and Environmental Health Investigations Branch personnel resented the apparent lack of trust by the public members of the Advisory Panel. The public members of the Advisory Panel in turn viewed the unwillingness of the DHS/DOE staff to follow directions as a negation of the hard won citizen control over the investigation. The result was intensifying spiral of distrust by the community, perpetuated by acts perceived by the community to be evidence of increasing bad faith by DHS.

An example of the conflict emerged when decisions regarding distribution of the draft radiation study were being made by the worker health Advisory Panel. In the end, DHS Occupational Health Branch staff member Dr. Robert Harrison prematurely released the report to Rocketdyne over the objection of the draft worker health Advisory Panel. While the facts of the issue are more fully detailed in the response to question #3, the attitude of DHS management is worth noting.

Dr. Raymond Neutra, as late as April 1999, appears not to understand the source of the community frustration with DHS. His April 14, 1999, e-mail to EHIB staff attributed the tension between DHS staff and legislative personnel to the personal animus of legislative staff member Syrus Devers. (See Exhibit L.) Dr. Neutra

appears not to recognize that his staff might have engaged in poor judgment by releasing two reports over the majority objection of the worker health Advisory Panel.

The draft worker health Advisory Panel consisted of educated citizen experts that became the core of the "community representatives" that so concerned Rocketdyne, the DHS health bureaucracy and the cleanup agencies. It was clear this Advisory Panel, led by The Committee to Bridge the Gap, kept public interest focused on the claim that additional community and worker epidemiological studies were needed. It was also clear that this group was not well received by DHS or Rocketdyne as the activists, over time, became more aggressive and questioning in their attitude towards the DHS public health bureaucracy.

A review of the record shows that DHS management did not accept the worker health Advisory Panel's legal and contractual control over the scientific investigation and community epidemiology work. This attitude and the community response appears to be the source of much conflict and delay. As a legal matter, the expiration of the DOE/PHI contract ended the Rocketdyne occupational health worker study and the worker health Advisory Panel's control over DHS actions.

Analysis: Did Rocketdyne influence DHS to change the membership of the worker health study Advisory Panel?

It is clear that in late 1997, near the time that DOE refused to begin funding of community studies, Rocketdyne was actively attempting to have DHS structure the membership of an advisory committee to oversee prospective community health or exposure studies. (See Exhibit M.)

The DHS Environmental Health Investigations Branch staff appears to have been independently contemplating a revised Advisory Panel membership. At the October 29, 1997 U.S. EPA Working Group advisory meeting, Environmental Health Investigations Branch representative Marilyn Underwood indicated that DHS was considering asking the existing advisory panel to "work with us as we proceed" and that "[W]e would like to probably add more community folks to that." (See Exhibit N.) In late 1997, the Environmental Health Investigations Branch was attempting to find funding for additional community studies, and was considering the Advisory Panel structure within any new study. However, federal funding was not secured, and the Environmental Health Investigations Branch did not seek state funding for a new community health study.

It is troubling that representatives from both the DHS Occupational Health Branch and Environmental Health Investigations Branch participated in two conference calls with Rocketdyne prior to December 18, 1997, discussing the makeup of the

“new” study Advisory Panel. (See Exhibit M.) It is difficult to evaluate if Rocketdyne was trying to tamper with the membership of the existing worker health study Advisory Panel or was merely focusing on developing a more friendly successor panel. The content of the telephone conference discussions was not memorialized but Environmental Health Investigations Branch Chief Richard Kreutzer recalls being “uneasy” about the calls. The conference call discussions may have had some adverse effect on the DHS relationship with the worker health Advisory Panel because an Environmental Health Investigations Branch memo indicates that, as of December 1, 1997, Ian Walker and Clem Walsh of the Investigations Branch were talking about an “interim group to oversee EHIB work.” (See Exhibit O.)

Rocketdyne did not appear to advocate changes in the membership of the existing worker health Advisory Panel but did appear to be attempting to insure that any future advisory panel had a different and larger group of community members.

Analysis: Did DHS actively assist in the termination of the worker health advisory panel funding?

In the period 1997-1999, relations between the worker health Advisory Panel and DHS appeared to deteriorate completely. The DHS Environmental Health Investigations Branch waited from early 1997 until November 1998 to contact panel members about a possible Environmental Health Investigation Branch role in a proposed new community study. The UCLA occupational chemical study was ongoing and nearing release in November of 1998, and still the worker health Advisory Panel and the Environmental Health Investigations Branch were not engaged in planning a follow-up community study.

One must ask what work the DHS Environmental Health Investigations Branch expected to be completed in the community study phase because for almost 18 months there is no evidence anyone at the Environmental Health Investigations Branch was developing a work plan. In fact, Dr. Kreutzer’s undated memo says, “We (EHIB) were having difficulty determining a role around this time... We were trying to determine if the Advisory Panel was the appropriate representative for the concerns of the community. And we were trying to reach agreement about our branch’s ethical public health obligation....”

It is clear that by design or negligence, that the DHS Environmental Health Investigations Branch had no intention of completing a work plan and seeking funding for work commencing prior to the expiration of the contract that created the worker health advisory panel. The DHS Environmental Health Investigations Branch passively assisted in the termination of the worker health Advisory Panel

by inaction until the panel was set to expire under the terms of the DOE/PHI contract.

Conclusion

In the period from 1997-1998, Rocketdyne was actively lobbying both the DHS Occupational Health Branch staff and the Environmental Health Investigations Branch staff to change the membership and authority of any future community health advisory panel. It is unknown if this lobbying caused DHS to change its behavior towards the worker health Advisory Panel members.

Commencing in 1996, the relations between the members of the worker health Advisory Panel and DHS Occupational Health Branch section chief Dr. Robert Harrison deteriorated to the point where DHS staff from both the Occupational Health Branch and the Environmental Health Investigations Branch developed motivations independent of the Rocketdyne organization to end the policy and procedural control exercised by the worker health Advisory Panel.

The record supports the view that DHS allowed the worker health Advisory Panel to expire on its own terms. DHS did not actively seek a new role for the existing worker health Advisory Panel members in planned community health studies until the expiration of the DOE worker health study contract was imminent.

Question #3: Did DHS impermissibly release the draft UCLA worker health study over the objection of the worker health Advisory Panel?

In July 1996, the worker health Advisory Panel public members instructed DHS not to release the draft UCLA worker health study to Rocketdyne and its consultants. (See Exhibit P for a series of letters and notes regarding this issue.) The panel held a subsequent teleconference meeting and voted not to release the draft study to Rocketdyne. Notwithstanding the Advisory Panel's instruction, Dr. Harrison released the draft report to the Rocketdyne management. The controversy prompted a letter from Dr. Harrison to Advisory Panel Co-Chair Dan Hirsch dated July 26, 1996 where Dr. Harrison asserts, "Throughout the process of conducting this study, DHS has been responsible for insuring that the final draft report undergoes adequate scientific review. In the conduct of occupational health studies, DHS maintains a policy of joint participation and sharing of all pertinent study information on an equal basis with labor and management representatives." (See Exhibit Q.)

In fact, DHS appears not to have a consistent policy on the release of draft health studies. In an interview on July 15, 1999, Dr. Richard Kreutzer stated that his Branch did not have a policy that required the release health studies to industrial dischargers. In contrast, Dr. Harrison in his interview on July 19, 1999 indicated that his Branch has always shared preliminary data and conclusions with labor and management.

Dr. Robert Harrison indicated during his interview that he believed the worker health Advisory Panel had no authority to control or supervise DHS in connection with the UCLA study. Dr. Harrison was asked if he had consulted his management or legal counsel to support his decision to release the study over the objection of the worker health Advisory Panel. He indicated management had "supported his decision" before and after the release. He was asked to provide any written opinions or documents that memorialized his management's support and he indicated he was unaware of any writings as he did not keep his e-mail.

In light of the original 1991 DOE-DHS contract terms analyzed in detail above, Dr. Robert Harrison's July 26, 1996 letter begs the question if he or DHS Occupational Health Branch had the type of authority or professional control of the study required to override an advisory panel directive. Even if Dr. Harrison's view of DHS policy requires the release of draft scientific work, a fair reading of the 1991 DOE/PHI contract does not support the view that DHS was the sole point of control for the DOE/PHI worker health study's distribution.

Conclusion

The DOE worker health contract gave nearly unprecedented control to the worker health Advisory Panel over the worker health studies. DHS violated the "collaborative" spirit, if not the terms of this contract, when it released the June 1997 and January 1999 draft worker health studies over the strong and explicit objections of the Advisory Panel. (See Exhibit K.)

Question #4: Did DHS fail in its duty to conduct community exposure and epidemiology studies at the Rocketdyne (SSFL) facility?

DHS-EHIB Budget Issues

The decision to commit resources to a comprehensive community study of the communities surrounding the Rocketdyne SSFL has been considered and

reconsidered by DHS management and staff for almost ten years. It appears that DHS has been unable to reach a conclusion to either proceed with comprehensive community studies, or in the alternative, end its involvement with additional community studies. The indecision appears to have been exacerbated in part because the Legislature has provided no funding for new epidemiological studies and because DHS appeared to be unwilling to alter its existing funded priorities to support an extensive new community epidemiological study.

Governing Authority

Any analysis of DHS's responsibility to conduct community epidemiological studies must begin with DHS's statutory duty. HSC§100325 requires DHS to conduct special investigations of "the sources of morbidity and mortality and the effects of localities, employments, conditions, and circumstances on the public health..." More specifically, HSC§103875 requires DHS to conduct a program of epidemiological assessments to ascertain and monitor the incidence of cancer and monitor cancer associated with suspected carcinogens encountered by the general public.

The guidelines that govern the reporting and investigation of cancer incidents are found in the CCR publication "Guidelines to Address Citizens Concerns About Cancer in their Communities April 1998." The "tiered" CCR response begins with referrals from local health officers, and escalates to the local cancer registry which identify locations for cancer monitoring and assessment. In the event the assessments or monitoring disclose "unusual aggregation of cancers" or "possible exposure due to hazardous waste sites" CCR refers the matter to DHS Environmental Health Investigations Branch or other state agencies for further assessment and investigation. (See Exhibit B, page 2 and 3.)

Analysis: Did DHS have sufficient resources to monitor community exposure and conduct epidemiology studies?

Since 1988, DHS has collected statistics and monitored the incidence of cancer in the State. However, demands for investigation of cancer causation have vastly outstripped government resources dedicated to evaluate cancer. In fact, in 1992 the DHS cancer registry program took a 43% cut with no change in duties. In subsequent years, only specialized funding was restored, but even today, without considering inflation, the gross cancer registry funding is 18% below FY 1989-1990. (See Exhibit R.) The program response to vastly reduced resources has been an informal triage process to reduce workload to levels consistent with funding. (See Exhibit S.)

It appears that Governor Wilson's 1991-1993 budget cuts, the 1991 reorganization of DHS and the decision by DOE to not appropriate funds for Santa Susana area community exposure studies removed any ability of DHS to proceed with a major community investigation without a significant reordering of existing priorities.

It appears from the records and interviews of this inquiry that individual DHS public health professionals were forced to allocate incoming work in a triage process that protected DHS's historic commitment to childhood and reproductive diseases. It appears from the attitudes and writings of DHS staff that most, if not all, professional personnel were unwilling to forgo cancer investigations benefitting children and other historic priorities in favor of investigating cancer causation at or near the Rocketdyne SSFL. Within DHS, it was the prevailing view that prior investigative work related to the Rocketdyne SSFL site had uncovered only "marginal" causation data when viewed in comparison with other program priorities. These other priorities included childhood leukemia, brain cancer and other childhood cancer clusters.

In the years 1997-99, the residents in the areas surrounding the Rocketdyne SSFL facility were becoming aware of research evaluating cancer incidence in the vicinity of their homes and neighborhoods. The perception left after community review of the accumulating statistics was that some risk to residents existed and that the state was not responsive to the risk. The gap between the reality of the professional epidemiologists and the community residents is best explained by Dr. Kreutzer in his interview of July 15, 1999, when he indicated there is a lot of cancer and environmental disease in this state and the costs of pursuing the causation question at and near the Rocketdyne facility are too high to justify the results. He opined that it may be professionally unethical to pursue this case given the costs. Dr. Neutra is even more blunt when he explains in his 1990 published work that, "a systematic search for neighborhood aggregations of disease through the use of vital records and disease registries in a useless strategy..."

A contributing factor in the discounting of local cancer mortality data was the belief within the DHS epidemiological community that cancer morbidity and mortality data in the census tracts surrounding Rocketdyne was not elevated, when viewed comparatively, and could be explained by the incidence of tobacco use. In fact, every study or data review by the Cancer Surveillance Section or Environmental Health Investigations Branch personnel identified tobacco use as a likely cause of elevated cancer incidence.

The 1990 DHS study entitled, Cancer Incidence Rates in Los Angeles County found, "The most important known risk for bladder cancer is cigarette smoking. . ." although the study pointed out the lower lung cancer rate was not consistent. The 1992 DHS study by Dr. Peggy Reynolds identified at page 8 that, "For those

cancers which do show some elevation, cancers of the lung and bladder, there are two factors which argue against a general environmental agent. . . . Second, both lung and bladder cancer are known to be strongly associated with a number of causes other than radiation." The 1997 Nasser Report repeated the causation theory, "Among the moderately radiosensitive cancers, the total number of registered cancers of the lung and bronchus is significantly higher than expected. Close to 85% of all lung cancers are due to smoking tobacco." Dr. Eva Glazer in her 1999 interview explained the 17% increase in lung cancer observed by Nasser by stating that tobacco is a major causal factor in lung cancer.

The public health epidemiological community does not today view the Rocketdyne data as significant or elevated enough to justify a major commitment of state resources. This point was reiterated in the conclusions to the Final Report entitled "Health Studies at Santa Susana Field Laboratory--Expert Panel Review" (June 1999) when the independent reviewers sponsored by DTSC's Hazardous Material Laboratory concluded that the results of their data review "did not support the presence of any major environmental hazard." (See Exhibit T.)

It appears that DHS does not have sufficient resources to conduct major epidemiology studies in and near the Rocketdyne SSFL without a significant reordering of existing priorities.

Analysis: In light of DHS's limited resources, was there sufficient federal funding to conduct a community epidemiological study?

On February 15, 1991, in a letter to Rockwell senior management from Dr. Lynn Goldman, Chief of the Environmental Epidemiology and Toxicology Branch, now the Environmental Health Investigations Branch, Dr. Goldman stated that in response to requests from Assemblymembers Katz and Wright, DHS had conducted preliminary studies of community cancer rates, reviewed relevant documents and reviewed worker health and safety documents. Dr. Goldman concluded that "In our view the documentation about SSFL employees was inadequate to determine if there was a potential health risk at the site or if epidemiological studies are feasible." Dr. Goldman then asked for more data and Rockwell promised to provide such data as was available. (See Exhibit U.) In the midst of budget cuts and scientific reorganization, Dr. Goldman began what became a decade long uncertainty or unwillingness by DHS to commit to Rocketdyne SSFL community studies.

In April through June 1991, a series of detailed letters were exchanged between Assemblymember Terry Friedman; DHS, Dr. Lynn Goldman, Chief of the

Environmental Epidemiology and Toxicology Branch, now EHIB; and DOE epidemiologist Robert Goldsmith. The Assemblymember was requesting that DOE funding be spent immediately on outside experts for a full worker epidemiological study. Dr. Goldman was proposing a "go slow" approach using DOE money for her staff and conducting less complex worker exposure studies. DOE was clear it did not want to fund any community studies. (See Exhibit V.)

By September of 1991, it was evident that Assemblymember Friedman's position had prevailed and the federal entities reluctantly agreed to fund a worker health and a community exposure component. (See Exhibit W for insight into the DOE position prior to September 1991.) A September 16, 1991 letter to DOE Epidemiologist Robert Goldsmith from Dr. Lynn Goldman confirmed that DOE would fund a larger multi-year worker health epidemiological study using outside expert investigators. (See Exhibit X.)

The contract, as drafted, permitted some community exposure investigations, but it was significantly conditioned on available funds. The total cost of the study was estimated at \$1.4 million, although the project was funded at \$341,000 and subject to additional appropriations in later fiscal years. At DOE's suggestion, a scientific Advisory Panel was included in the contract and the panel was given wide ranging advisory and oversight powers similar to federal panels overseeing the DOE Hanford and Rocky Flats studies. Internal DHS funding issues remained, as noted in correspondence between The Committee to Bridge the Gap and Lynn Goldman dated September 17, 1991, which disputed the proper share of funding to be dedicated to overhead and DHS internal staff. (See Exhibit Y.)

After December 21, 1991, matters related to the worker study appeared resolved in favor of the Friedman view as DHS applied for second year funding of \$500,000 to be used exclusively for subcontracts to fund the worker safety epidemiological work.

Analysis: Why were community epidemiology and exposure studies never planned for or funded?

In the period 1989-1999, the planning and timing issues required to conduct the community epidemiological studies were never resolved and the studies were never funded. Extensive internal DHS communications considering community studies occurred in early 1997, but no conclusion was reached. As late as October 29, 1997, DHS Environmental Health Investigations Branch employee Marilyn Underwood introduced herself to the public for the first time and stated "...this issue is probably going to also transition into some of the concerns from the community wanting a health study or wanting some questions answered about some of the health impacts to themselves." On page 19 of the transcript, she states

“So I think, to be honest with you, we really have only gotten started.” In fact, the community and the Environmental Health Investigations Branch had been dealing with the same issue for seven years when Marilyn Underwood indicated her branch was just starting to consider community issues. The community was legitimately frustrated by the DHS inaction. (See Exhibit Z.)

It is clear in the 1997-1998 written record that Environmental Health Investigations Branch Chief Dr. Richard Kreutzer did not wish to make the Hobson’s choice of having his Branch be responsible for Rocketdyne community studies. The budget tension is clear in an e-mail dated August 28, 1998 between Division Chief Dr. Raymond Neutra and Dr. Kreutzer concerning the funding of the UCLA study. (See Exhibit AA.) It was not until February 1999 that any preliminary community study planning began by DHS management.

It was the job of the DHS Environmental Health and Investigations Branch to plan and budget for community health investigations. Beginning in 1993, and through the end of 1998, the Environmental Health Investigations Branch reacted to requests for new community health studies by a combination of inaction, hope that the Federal Government would pay for the work, and internal, but not publicly articulated, denial that the evidence supported the need for additional community health studies. The 10-year pattern of delay and inaction was unacceptable to a community that believed it was being exposed to environmental contaminants. The pattern and practice of delay is evidence of poor internal DHS management practices.

Analysis: Did the DHS Environmental Health Investigations Branch unreasonably delay in deciding to pursue additional community health studies?

In early 1997, as the first phase of the worker health study was near completion, Dr. Robert Harrison, Chief of the Occupational Health Surveillance and Evaluation Program Section, began to push DHS Environmental Health Investigations Branch staff on the need for additional community studies. (See Exhibit BB.) Dr. Harrison indicated in his correspondence that when the worker study came out, “we” [DHS] needed to have a conclusion about the safety of the community. He received no response from DHS Environmental Health Investigations Branch staff. (See Exhibit BB.)

On March 28, 1997, Dr. Peggy Reynolds, the DHS Environmental Health Investigations Branch staff person that led the 1992 cancer registry investigation, suggested to Dr. Richard Kreutzer that the Branch should assemble an interdisciplinary group to discuss the state of the data and the need for additional

investigations. The record appears silent on the DHS Environmental Health Investigations Branch response to the request for action. (See Exhibit CC.)

DHS Environmental Health Investigations Branch personnel in this period was, at best, ambivalent in their attitude towards new exposure analysis. Dr. Richard Kreutzer, in an undated memo, says of the months after May 1997, "There was much ambivalence since we were not aware of any reports documenting off-site exposure and we weren't sure what additional information could be obtained to address past exposure questions. Current exposures we thought could be addressed by the appropriate regulatory agencies." (See Exhibit O.) There is however, no evidence that DHS Environmental Health Investigations Branch staff communicated this conclusion to the public.

Apparently, no decisions regarding follow-up community epidemiological studies were reached because by September 1997, after receiving the 1997 Nasser Report, the DHS Environmental Health Investigations Branch had still not decided to pursue additional community studies. The lack of action was confirmed by Dr. Richard Kreutzer's undated recollection in which he stated that "not much happened in the following months" from May to December 1997. (See Exhibit O.) In December 1997, when DOE clearly stated that it would not fund community studies, the DHS Environmental Health Investigations Branch still had no plan to expand upon the 1997 Nasser data or engage in community health studies. (See Exhibit DD.)

Dr. Kreutzer appeared in public meetings to promise action to the Rocketdyne SSFL area residents but did not act on these promises. At the September 11, 1997 public meeting for the worker safety study, he offered the resources of DHS Environmental Health Investigations Branch to assist with the evaluations of offsite contamination, but he hadn't developed a plan nor assigned personnel to the task. (See Exhibit O.) He later offered the services of the DHS Environmental Health Investigations Branch staff at a meeting with County Supervisor Judy Michaels but apparently took no further action. (See Exhibit O.)

Dr. Kreutzer justified his inaction by his belief that DOE would fund the community studies, notwithstanding its December 1997 denial. The DHS Environmental Health Investigations Branch waited until early 1998 to look elsewhere for funding. (See Exhibit O.)

It is over one year from the date of Dr. Harrison's request for community studies, that DHS Environmental Health Investigations Branch began to seek alternative funding for the community epidemiological study. (See Exhibit EE for a discussion of a conference call on March 13, 1998.) It was an additional six months after March 1998 when Dr. Richard Kreutzer indicated to the worker

health Advisory Panel that the funding search has been unsuccessful. (See Exhibit EE Letter to Jack Geiger dated November 19, 1998.) Division Chief Dr. Raymond Neutra finally entered the funding search with a letter dated December 18, 1998, but given a prior statement of non-interest by the Agency for Toxic Substances and Disease Registry (ATSDR), the request did not have a realistic chance of success. (See Exhibit FF.)

It was not until February 5, 1999, that Dr. Raymond Neutra, in apparent anticipation of the final March release of the chemical exposure analysis of the UCLA worker health study, directed his staff to take action on a community health study. (See Exhibit H.) In his memo to staff, Dr. Neutra appears to have overruled staff reluctance to look at past exposure, but no follow up to this meeting is evident in the record.

It was not until the end of March 1999 that Dr. Kreutzer called a meeting of the worker health Advisory Panel to consider the community study planning issues raised in November 1998. (See Exhibit GG.) The Environmental Health Investigations Branch allowed two years to pass from the date Dr. Robert Harrison requested action on the community study issue. This was an unreasonable delay given the community concern with cancer risks from the Rocketdyne SSFL facility.

Conclusion

The California Health and Safety Code charges DHS with the duty to conduct special health and epidemiological investigations as to the causes of cancer. DHS failed in its duty to conduct such studies or, in the alternative, to articulate to the public a reason why such studies were inappropriate. DHS epidemiological staff did not believe the objective medical and epidemiological evidence justified an expensive commitment of existing resources to a new and extensive community health study. This view was not adequately articulated to the public. DHS staff were unwilling to change historic DHS health program priorities to fund Rocketdyne SSFL area community health studies.

Beginning in 1991 and extending through 1999, the DHS Environmental Health Investigations Branch made continuing institutional commitments to community health studies at and near the Rocketdyne SSFL facility. These began in 1991 with discussions between Dr. Lynn Goldman and Assemblymember Terry Friedman, continued through the writing of the DOE/PHI worker epidemiological study with its community health component, and ended with three years of letters, internal e-mail, and statements at public meetings after the results of the radiation component of the UCLA worker health investigation became known to DHS staff.

Given DHS's continuing commitments to public health investigations at the Rocketdyne SSFL facility, DHS Environmental Health Investigations Branch staff unreasonably delayed the planning and funding of Rocketdyne SSFL area community health studies. In mitigation, there was insufficient new state or federal funding to add staff to conduct the community epidemiological health studies sought by local residents and legislators from areas surrounding the Rocketdyne SSFL. It was unfortunate that DHS did not communicate to the Legislature and the public the basis for its decision making.

Section IV: Recommendations

1. Amend the California Cancer Registry Guidelines to provide criteria for scientific follow up when increased risk is suggested in an assessment of observed vs. expected cases. Specify the type and procedure to use in conducting follow-up activity.
2. Amend or adopt internal DHS Environmental Health Investigations Branch guidelines to provide criteria for commencing community epidemiological studies after the detection of "unusual aggregations of cancers." Include some objective measure of unusual aggregations in the action guidelines. The criteria should include both action procedures and procedures to communicate a decision not to act.
3. Require circulation of all relevant cancer incidence research including both positive and negative results to community/advisory review panels as well as researchers engaged in ongoing related investigations.
4. Consider the employment of a mediation/arbitration consultant to develop a common plan and understanding between the Rocketdyne Advisory Panel community members, and appropriate government agencies.