738 0
File: 541.460.000n
C.H.

THE MEMPHIS DEPOT
TENNESSEE

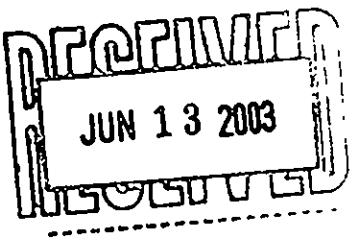
ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 738

DOCUMENT PROTECTED BY

PRIVACY ACT

Agency for Toxic Substances
and Disease Registry
Atlanta GA 30333



June 11, 2003

Mr. Eugene Brayon

Dear Mr. Brayon.

This is in response to your recent letter to John DeBack, the Memphis Depot Base Transition Coordinator In your letter, you referenced a May 8, 2003 letter to Clyde Hunt in which you raised issues related to the Center for Disease Control and Prevention (CDC) investigation of the childhood leukemia cluster in Fallon, Nevada The Agency for Toxic Substances and Disease Registry (ATSDR) was also involved in Fallon. I never received a copy of your letter to Mr Hunt so I will respond to the two issues raised in your letter to Mr. DeBack that relate to CDC and ATSDR

You asked why CDC only tested for 125+ chemicals in blood and urine rather than also testing air, water, and food You also requested information on the procedures used in this testing Air, water, household dust, and soil **were** collected and tested as indicated in the attached executive summary of the investigation done by CDC's National Center for Environmental Health (NCEH). You can download the entire report, which was released in February from http //www.cdc gov/nceh/clusters/Fallon/study htm As indicated in the attached summary, NCEH conducted an exposure assessment of the families in Fallon with a child with leukemia and a comparison population of Fallon families without a child with leukemia Members of all these families did have biological samples (blood, urine, and cheek cells) tested for a wide variety of chemicals Indoor air, play yard soil, household dust, and tap water was also collected and tested from each home The full report has detailed information on the procedures used.

ATSDR evaluated seven possible exposure pathways in the Fallon area. Five of these seven evaluations have been released I have attached the ATSDR press release related to this activity

Both CDC and ATSDR's reports identify tungsten in drinking water as a possible chemical of concern Little is known about the toxicity of the tungsten levels found in Fallon

The second issue you raised was whether ATSDR should update the approach used at Memphis Depot in light of the situation at Fallon. Specifically you asked, "Why aren't we doing the same thing?"

The short answer to that question is that the information provided by the community, and the environmental and cancer data evaluated by ATSDR did not justify an in-depth analysis such as done in Fallon Before ATSDR or CDC conduct such analyses, we need to have a good indication of significant site-related contamination or disease cluster. ATSDR's evaluations are recorded in Memphis Depot Public Health Assessment (PHA) and the recent public health consultation that I did, and the review of cancer done by Dee Williamson.

In contrast, there was a cluster of leukemia in children in Fallon which is why CDC is evaluating possible exposures that these children might have had. In Anniston, Alabama, ATSDR followed up on community concerns about polychlorinated biphenyls (PCBs) in the environment by conducting PCB blood testing. The high levels found stimulated clean-up actions by EPA and a full health study by ATSDR.

Let me assure you that ATSDR would have conducted an in-depth analysis in the Memphis Depot area, if we had found evidence of significant off-site exposure in the Memphis Depot area or an indication of a disease cluster. As I related previously, we did not

If you would like to discuss these issues further, please contact me toll free at (888) 422-8737 ext. 0441, direct at 404-498-0441, or by Email at JCrellin@cdc.gov.

Sincerely,

John R. Crellin, Ph.D.
Senior Environmental Epidemiologist
Superfund Site Assessment Branch
Division of Health Assessment and
Consultation

Enclosures

cc:
John DeBack, Memphis Depot
Turpin Ballard, EPA
Memphis RAB members

Cross-Sectional Exposure Assessment of Environmental Contaminants in Churchill County, Nevada

-Final Report-
February 6, 2003

Centers for Disease Control and Prevention
National Center for Environmental Health
Division of Environmental Hazards and Health Effects
Health Studies Branch

EXECUTIVE SUMMARY

Background

As part of its response to the elevated number of children in Churchill County in whom acute lymphocytic leukemia (ALL) had been diagnosed, the Nevada State Health Division (NSHD) requested technical assistance from the Centers for Disease Control and Prevention (CDC). The purpose of the subsequent collaborative investigation was to conduct a cross-sectional exposure assessment to identify contaminants unique to the Churchill County community We examined exposures to certain chemical contaminants known or suspected to cause cancer in humans, associated previously with clusters of childhood leukemia, thought to be present in the local environment, or because we had the analytic capacity to do so

Methods

We conducted a cross-sectional exposure assessment that included the families of children already enrolled in an NSHD leukemia investigation and comparison families that we identified through random digit dialing. The study population included 14 ill children who resided in Churchill County before diagnosis of their ALL or acute myelocytic leukemia. Case families included parents and siblings, as well as other care-taking adults in the home. Each case child was matched with four comparison children by sex and age, the matched comparison parents also were enrolled A total of 205 participants visited a CDC clinic site in Fallon, Nevada. Clinic staff collected extensive questionnaire information and biologic samples (i e , blood, urine, and cheek swab samples). Environmental samples (i e., indoor air, play yard soil, household dust, and tap water) were collected from current homes and previous homes for all case families. Environmental samples were also collected from current homes for comparison families and previous homes for one randomly selected matched comparison family for each case family. Biologic and environmental samples were tested for heavy metals, persistent and nonpersistent pesticides, polychlorinated biphenyls (PCBs), and volatile organic compounds (VOCs). We also tested the biologic samples for evidence of previous viral infections. We also tested environmental samples for radon and radionuclides.

Considerable efforts were taken to ensure the quality of the analyses we conducted We convened statistical and genetic advisory groups to provide external peer review and comment In addition, a multi-agency panel was formed to review all

environmental results using a secure electronic site for data presentation We also hosted dedicated weekly conference calls to facilitate communication among state and federal partners

In our cross-sectional analysis, we compared our laboratory results with levels associated with adverse health effects in previous research. When no such levels were available, we compared our results with the geometric mean and 95th percentile levels from the *Second National Report on Human Exposure to Environmental Chemicals (National Exposure Report),* which provides population-based reference ranges. The environmental sample results were compared with published standards that are identified for each chemical

Appropriate statistical procedures such as cross-sectional descriptive analysis, spatial analysis, and conditional logistic regression assessed the probability that any elevated exposures could have resulted by chance. During our case-comparison analysis, we initially considered the 13 out of 14 case children who had submitted biologic samples. We then repeated the analysis using the nine children who had the most similar disease profiles The second analysis was limited to case children with precursor-B cell lymphocytic leukemia that was diagnosed before they were 6 years of age, and who lived in Churchill County for at least the 6 months before their diagnosis.

We further compared the infection status of all case children diagnosed with each of the following to their matched comparison controls. precursor-B or B-cell lymphocytic leukemia; precursor-B or B-cell lymphocytic leukemia diagnosed before 6 years of age; precursor-B or B-cell lymphocytic leukemia residing in Churchill County for at least 6 months before the leukemia diagnosis; and T-cell leukemia.

Results

We found community-wide exposure to the element tungsten (geometric mean=1.19 µg/L, 95% CI 0.89-1.59) compared with the *National Exposure Report* reference of 0.08 µg/L (95% CI 0 07-0.09). We also found levels of arsenic in urine samples ranging from nondetectable to 1180.40 µg/L. Normal urine levels of arsenic are lower than 50 µg/L; a level >200 µg/L is considered abnormal and may be associated with health effects Both tungsten and arsenic were identified in tap water samples community-wide. Six additional metals (antimony, barium, cesium, cobalt, molybdenum and uranium) were either slightly elevated above the population geometric mean or else had more than 10% of their results above the 95th percentile level of the reference population or health-based value. Although individual homes had environmental samples with detectable levels of these metals, they were not elevated community-wide

Our cross-sectional analysis also identified five nonpersistent pesticides (out of 31 nonpersistent pesticides or metabolites analyzed) that were each above their respective 95th percentile national reference value in more than 10% of the Churchill County urine samples. These pesticides include two organophosphate pesticide metabolites, two chlorinated phenol pesticides, and a fungicide. We also identified an aromatic hydrocarbon pesticide that was slightly higher than the reference. We did not find community-wide elevations of any of these nonpersistent pesticides in environmental samples

Among 11 persistent pesticides analyzed, we found only DDE (geometric mean=447.07 ng/g of lipid, 95% CI 355 09-562.87) to be above the *National Exposure*

Report reference of 260 00 ng/g of lipid (95% CI 234.0-289 0) We did not find elevated levels of DDT or DDE in environmental samples, but levels in humans can reflect historical exposure because these chemicals are stored in body fat. We also found a geometric mean level of 10 46 ng/g of lipid of hexachlorobenzene in our Churchill County study population compared with the national level of less than the detection limit. However, the *National Exposure Report* used an instrument detection limit of 60.5 ng/g of lipid, which is substantially higher than our mean level We found detectable levels in 18 of the 36 different PCBs that we analyzed; all were below the 95% percentile of the *National Exposure Report*.

VOCs were not included in the *National Exposure Report* so we used population reference levels from the third National Health and Nutrition Examination Survey (1988-1994). We compared arithmetic means and 95% CIs and found no community-wide elevated VOCs. Levels were similar among case and comparison families. VOCs were not elevated in air samples.

In this study, testing for multiple viruses could not definitively relate viral infection to the childhood leukemias in Churchill County.

We used conditional logistic regression to look for a relation between any of the exposures and leukemia status. An odds ratio (OR) greater than 1.00 suggests increased risk, and an OR equal to or less than 1.00 suggests no risk or decreased risk. A p-value less than 0 05 suggests that chance alone is unlikely to explain the deviation from 1.00 Tungsten (OR 0 78, p-value 0 57), arsenic (OR 0.60 p=0.22) and the rest of the metals did not suggest increased risk. One of the PCB congeners had an OR greater than 1 00 (p=0.01), while another congener had an OR less than 1.00 (p=0 02) One VOC (ethylbenzene) suggested increased risk (p-value 0 04) while another (tetrachloroethylene) suggested decreased risk (p=0 004). From the interview information, we identified an increased risk with older paternal age (OR 1 14, p=0.03). We found a decreased risk among children in whom allergic rashes were diagnosed (OR 0 7, p=0 01)

Conclusions and Recommendations

This investigation identified an ongoing environmental exposure of concern among Churchill County residents. We confirmed that many people living in Churchill County still receive significant arsenic exposure, despite the general knowledge that Churchill County water exceeds recommended levels of arsenic in drinking water. We recommend that community members take advantage of alternative water sources until the new water treatment facility is completed.

Biologic results also identified tungsten as a potentially unique exposure within Churchill County. We are working with NSHD to further define tungsten exposure in Nevada and to evaluate potential routes of exposure Because of our study findings, the National Institutes of Health is considering tungsten as a priority chemical for toxicologic research.

Although biologic results demonstrated a limited degree of elevated pesticide exposure in the community, environmental testing did not identify any sources of ongoing exposure We recommend conservative use of personal household pesticides and recommend that state public health officials increase public education efforts about safe use of pesticides.

Having found elevated levels of several chemicals, we now plan, with the input of the Children's Oncology Group and other experts, to conduct genetic testing to try to determine whether differences exist between case families and comparison families in genes that are responsible for the way these environmental chemicals are metabolized

All participants have been given their personal results, as well as information about how to minimize their environmental exposures. We encourage participants to share elevated findings with their personal health care providers

ATSDR MEDIA ANNOUNCEMENT

ATSDR releases results of environmental exposure pathway investigations supporting the Churchill County Leukemia Cluster Investigation in Fallon, Nev.

For Immediate Release: February 12, 2003

The Agency for Toxic Substances and Disease Registry (ATSDR), a public health agency of the U.S. Department of Health and Human Services, today released the results of five environmental exposure pathway investigations related to the Churchill County (Nevada) Leukemia Cluster Investigation.

The investigations were requested by the Nevada State Health Division (NSHD) as part of the state's efforts to explain the incidence of childhood leukemia in Churchill County.

For the vast majority of contaminants and pathways reviewed, ATSDR did not find completed pathways of public health concern.

Specifically, ATSDR did not find a relationship between environmental exposure pathways and the leukemia cases in Churchill County.

The agency identified contamination sources, evaluated possible ways a contaminant might reach people and determined whether any contaminant in an exposure pathway was present at levels that could cause illness in the past, present or future.

In cooperation with NSHD, ATSDR will present its findings at a 6 p.m. town hall meeting tonight at the Fallon Convention Center, 100 Campus Way. The meeting is sponsored by the Community United Response Team in cooperation with Western Nevada Community College.

After their presentations, ATSDR scientists will be available to discuss their research with area residents. Agency scientists will return to the convention center to talk one-on-one with residents on Thursday, February 13, from 1 p.m. to 3 p.m.

ATSDR's evaluations were performed by a multi-disciplinary team of scientists, physicians and health educators.

Although ATSDR's activities focused on evaluating exposures that might relate to leukemia, the agency also considered public health effects pertinent to any exposure.

ATSDR's investigation reports include the following findings:

- ATSDR did not find a relationship between environmental exposure pathways and the leukemia cases in Churchill County.
- Evidence cross checked by multiple regulatory agencies showed no evidence of leaks from the JP-8 fuel pipeline serving Naval Air Station Fallon.
- Activities at Naval Air Station Fallon are not a public health hazard.
- Eating the mercury-contaminated fish and duck found in Churchill County is a potential public health hazard for humans, especially for long-term exposures to young children and women of childbearing age. County residents should follow the NSHD health advisories for fish and ducks
- The results of tap water samples collected in 2002 from 76 homes showed high levels of naturally occurring metals, such as arsenic and uranium. Tap water from these homes is drawn from private and municipal wells. The sampling results reflect water quality from the three different groundwater sources used for drinking water.
- Arsenic levels in many tap water samples substantially exceeded the recently revised Environmental Protection Agency (EPA) drinking water standard for arsenic. Because studies in other parts of the world indicate that long-term exposures to similar levels of arsenic in drinking water can be associated with a number of adverse health effects, ATSDR recommends that, currently, tap water in Churchill County not be used as a primary drinking water source.
- Uranium levels in tap water from some shallow private wells substantially exceeded the EPA drinking water standard for uranium. Toxicologic studies indicate that long-term exposures to uranium in drinking water at these concentrations may pose an increased risk of kidney damage. Therefore, people using those wells should consider using alternate sources for drinking water to reduce their exposures.
- Tungsten was found in most tap water samples collected. EPA has no drinking water standard for tungsten. Research on the possible toxicologic effects of tungsten is very limited However, efforts are underway to further define tungsten exposures in Nevada and to evaluate potential routes of exposure.

Along with the final version of ATSDR's examination of the JP-8 jet fuel pipeline, the public comment versions of four other reports are being released today. These documents report investigations into the following possible sources of environmental exposure:

- Naval Air Station Fallon

- Surface water
- sediment and biota (focusing on fish and ducks)
- Surface soils and residential indoor dust
- Air quality

ATSDR's investigations into drinking water and pesticide use have not concluded. Reports on these examinations will be released in about six weeks.

The public comment versions of the ATSDR investigations released today are available for public review at the Churchill County Library, 533 S. Main St., Fallon

The **public comment period ends March 17, 2003.** ATSDR welcomes comments from the public. Send written comments to the following address:

Chief, Programs, Evaluation, Records and Information Services Branch
Division of Health Assessment and Consultation
ATSDR Mailstop E-32
1600 Clifton Road NE
Atlanta, GA 30333

Comments received during the public comment period will be logged into the administrative record of the reports. Public comments and ATSDR's responses will be included in an appendix to the final reports when they are released. Although the names of those who submit comments will not be included in the final reports, the names are subject to release in response to requests made under the U.S. Freedom of Information Act.

Community members seeking information on the procedures or the content of the reports should contact ATSDR's Regional Representative Libby Levy in San Francisco at (415) 947-4319. Environmental Health Scientist Gail Scogin also may be contacted by calling ATSDR toll-free at 1-888-42-ATSDR (1-888-422-8737). Callers should reference the Fallon leukemia site.

FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE