## ENVIRONMENTAL COMPLIANCE DIVISION

Date Received: 2/22/94

Tickler No. _____ Due Date _____

_____ Expedite _____ Priority ✓ Routine

Subject: Revised Version of ATSDR ltr

For: _____ Action _____ File ✓ Information

✓ Director JWR 2/22/94

___ Head, RCRB _____ ___/___/___

✓ Head, ECMB _____ ___/___/___

___ Head, ETB _____ ___/___/___

Notes: Danny: Neal provided the attached as faxed from ATSDR today. It's toned down some but still attention-getting. ATSDR says they mailed signed version to CG today.

VR

Fred

Steph: Copy me.

CLW

0000005284

DEPARTMENT OF HEALTH & HUMAN SERVICES
Public Health Service

Agency for Toxic Substances
and Disease Registry
Atlanta GA 30333

FEB 17 1994

Brigadier General Lawrence H. Livingston
Commanding General
Camp Lejeune Marine Corps Base
PSC 20004
Camp Lejeune, North Carolina 28542-0004

Dear General Livingston:

The Agency for Toxic Substances and Disease Registry (ATSDR) has reviewed the tap water sampling data (December 31, 1992 - December 31, 1993) for the medium-sized water distribution systems; Hadnot Point, Marine Corps Air Station, and Holcomb Boulevard and the small-sized distribution systems; Courthouse Bay, Rifle Range, and Onslow Beach. We believe these data indicate a widespread problem with plumbing and that the extremely high levels detected at many of the faucets sampled pose a significant risk to the health of your personnel. Lead levels detected (0 - 10,100 ppb) range from non-detectable to over 600 times the Environmental Protection Agency's Action Level of 15 parts per billion.

Because the effects of lead on the body are additive and long lasting, people drinking water containing lead at the high levels detected at Camp Lejeune may absorb enough lead to experience serious long-term health effects. Therefore, we are concerned that action be taken to prevent exposure based on the known lead levels in tap water rather than waiting until elevated blood lead levels appear in your personnel.

In response to our concerns, your staff sampled blood lead levels in 102 individuals; three people had slightly elevated lead levels. We interpret these results cautiously because of the following limitations:

1) The blood sampling was not correlated with information on where people were getting their drinking water. Therefore, these screening results cannot be used to indicate that there is no risk to people when they drink from faucets with excessively high levels of lead.

2) Overall, the blood lead levels were surprisingly low. Seventeen percent of the individuals sampled had blood lead levels less than 1.0 ug/dL; the national average for blood lead levels in adults is 6-8 ug/dL. Since Marines may engage in activities that increase their lead exposure (e.g., handling artillery batteries, and cigarette smoking), ATSDR would expect their blood lead levels to be at least close to the average. ATSDR reviewed the quality control information and noticed that the instrument was not calibrated on the day the blood samples were analyzed. The information sent to us indicated that the last calibration was performed twelve days before (12/29/93) the blood samples were analyzed. Additionally, the standards run on the following day appear to be low. Therefore, the actual blood lead levels may be higher than reported.

3) Blood lead measurements are a conservative indication of lead exposure. Once in the blood, lead is distributed to soft tissue (kidney, bone marrow, liver, and brain) and mineralizing tissue (bones and teeth). Mineralizing tissue contains about 95% of the total body burden of lead in adults. Consequently, after a single exposure a person's blood lead level may begin to return to normal; the body burden, however, may still be elevated. For lead poisoning to develop, it is not necessary for a person to have a major acute exposure to lead. The body accumulates lead over a lifetime and releases it slowly, so even small doses, over time, can cause lead poisoning. It is the total body burden of lead that is related to the risk of adverse effects.

In the remainder of this letter, we list the most important actions which can be taken to safeguard the health of your personnel by educating personnel and ceasing exposure.

EDUCATION

In order to protect the health of your personnel and to prevent prolonged exposures, additional health education should be provided to all employees, residents, and visitors on the importance of flushing the water lines and the seriousness of the consequences if proper flushing is not done. We have developed a simple four page flier (enclosed) to address frequently asked questions. Flushing procedures are quite simple: If water sits overnight in the line, the tap should be flushed before use in the morning and again if the tap is not used for more that 4 hours. The water should be allowed to run until it becomes noticeably colder; in most instances this takes 2-3 minutes.

The educational efforts to date have not been effective in getting personnel to flush taps. According to your recent survey, out of 102 individuals surveyed when tested for blood lead, only one individual flushed the tap for the recommended time. Therefore, we recommend these fliers be distributed to all employees, residents, and visitors and to new personnel as they arrive on base.

CONTROLLING AND PREVENTING EXPOSURE

At certain levels, it is recommended that actions be taken to prevent exposure of personnel. In general we recommend that if a tap water sample contains lead greater than 15 ppb, further evaluation of the current use of that water be made to determine who is drinking it. The following table provides the lead levels at which we recommend protective action be taken:

| Lead levels | People drinking the water | Action Recommended |
|---|---|---|
| > 50 ppb | Adults | Cease exposure* |
| 15 - 50 ppb | Adults | Reduce exposure** |
| ≥ 15 ppb | Children or pregnant women | Cease exposure |
| 0 - 14 ppb | Children or adults | No action necessary |

* Cease Exposure: You can cease exposure by posting signs above particular faucets stating that water from them is not to be used for drinking. You can also stop exposure by offering bottled water, providing a water purification method, or replacing the plumbing.

** Reduce Exposure: Exposure can be reduced by flushing water lines for 2 - 3 minutes before using.

There are several actions which should be taken based on specific sampling results:

1) A large proportion of deep sink faucets tested reported lead levels above 50 ppb, indicating a potential inherent problem with the type of faucet used in those sinks. We recommend not using water from deep sink faucets for drinking and suggest that signs be posted at all deep sinks on the base stating that water from these faucets should not be used for drinking under any circumstances.

2) Sampling results (HP1-10C) from building H 55, a single family home, showed a lead level of 52 ppb. ATSDR recommends stopping exposure at this home.

3) Sampling results (HP2-24A) from building FC 40, an auto shop kitchen faucet, showed a lead level of 256 ppb. ATSDR recommends stopping exposure at this faucet as well.

4) Sampling results (MCAS3-56A,B,C) from building G 560, a staff club ladies bathroom faucet, showed lead levels of 698, 321, and 778 ppb respectively. Most likely, no one is drinking water from this tap; however, we recommend that a sign be posted at this tap informing people that water from this faucet should not be used for drinking.

We appreciate your concern for the personnel and families of Camp Lejeune. In the interest of public health, we would like to receive from you a written response to our recommendations by March 18, 1994 so that we have a clear idea of the actions you will take and the time frame in which you will take them. If you have any questions, please have your staff contact Ms. Carole Hossom, Federal Programs Branch, at:

ATSDR
Division of Health Assessment and Consultation
1600 Clifton Road NE (E-56)
Atlanta, Georgia 30333
404-639-6070
FAX 404-639-6076

Sincerely yours,

Robert C. Williams, P.E., DEE
Director
Division of Health Assessment
and Consultation

Enclosure
cc:
Mr. Robert Warren, MCB Camp Lejeune
Mr. Neal Paul, MCB Camp Lejeune
Captain W. Thomas, NEHC
Yvonne Walker, NEHC
Pete McGarry, EPA
John McFadyen, NC DEHNR

CLW
0000005288