

From: Michael F. Weber (MFW1)
To: def, jrm4
Date: Thursday, August 1, 1996 10:15 am
Subject: Allegation - hair loss

Don,

On July 31, 1996, John Madera received a voice mail message from Larry English, attorney for NEORSD, in which Mr. English forwarded a concern which NEORSD had received earlier in the week from an anonymous individual. According to Mr. English, a woman from Trans Environmental Lab in Cleveland, OH, stated that in 1995, she and her co-workers performed non-radiological testing on some water samples from AMS. Shortly thereafter, she and some of her female co-workers began to suffer hair loss. She wanted to know if the hair loss could be associated with exposure to radiation. Mr. English suggested that we call Rich Connelly at NEORSD for more details, since Mr. Connelly took the original call from the Trans Environmental Lab worker.

On July 31, 1996, I called Mr. Connelly. He stated that the Trans Environmental Lab worker called him on July 29, 1996, and indicated that in March or April 1995, she and her co-workers performed non-radiological testing of some water samples from AMS's basement, and, shortly thereafter, she and some of her female co-workers began to suffer sudden hair loss. She asked Mr. Connelly if the water samples contained radioactive material. He said he didn't know if the samples did or did not contain radioactive material. He asked for her name, but she refused to reveal it. He then suggested that she call NRC, but she replied that she did not wish to do that. She closed the conversation by saying that she may call Mr. Connelly again.

Mike Weber

ALLEGATION ACTION PLAN
ALLEGATION NO. RIII-96A-0113

Licensee: Advanced Medical Systems, Inc.

Docket/License No: 030-16055 / 34-19089-01

Assigned Division: DNMS

Attached Pertinent Documents: Memo from M. Weber to D. Funk

5/17/96
Close out -
Called Larry
English and
explained
situation
D.F.

I. Division Action

A. Prepared by: Michael F. Weber 8/1/96
Technical Staff Date

B. Approved by: [Signature] 8/2/96
Branch Chief Date

II. Allegation Review Board Membership:

M. Kurth - ~~DNMS~~ ^{DRP}
T. Tongue - ~~DRP~~
B. Burgess/C. Weil - ~~OAC~~
D. Funk - ~~OAC~~
J. McCormick - ~~Bergman~~
M. Weber - ~~DNMS~~

III. Remarks

Safety Significance: HIGH

MEDIUM

LOW

NA

☒ Approved As Is.

☐ Approved with Modifications as Documented in Plan.

☐ Disapproved for Following Reasons:

☐ Yes ☒ No OI Referral (Priority: HIGH NORMAL LOW)

[Signature]
Allegation Review Board Chairman

6/5/96
Date

C/92

ALLEGATION/PERIPHERAL ISSUE ACTION PLAN

Concerns and any peripheral issues associated with a concern should be documented on a separate page. Each concern and peripheral issue, if any, should be documented in the follow up report as is stated in this plan. If there are several concerns in one area, one page can be used. Otherwise, a separate page should be used for each concern.

☒ Concern No. 1

☐ Peripheral Issues

Concern: Certain water samples from AMS were contaminated with radioactive material (presumably Co-60), and the Co-60 caused hair loss to the workers who analyzed the samples at Trans Environmental Lab, Cleveland, OH, in March or April 1995.

I. Action Evaluation: The following method of resolution is recommended (circle):

- A. Send to Licensee Requesting Response in Days with RIII Follow up*
- B. Priority RIII Follow up
- C. Follow up During Routine Inspection Within 60 Days
- D. Follow up with Assistance from OI
- E. No Action - Outside NRC's Charter (describe basis below)
- ✓ F. **No Action - Without Merit (describe basis below)**
- G. Refer to
- H. Other (specify)

On Aug. 1, 1996, M. Weber called AMS and asked if anyone there had ever sent samples for analysis to Trans Environmental Lab (TEL). An AMS worker, Chris Reed, indicated that on two occasions in 1995, an AMS contractor (ASAP Technical) sent samples for non-radiological analysis to TEL. The first occasion was in May 1995, when AMS had a large, underground storage tank removed from its property. (RIII inspectors were present at AMS when this tank was removed.) The tank contained a small amount of liquid/sludge/sediment, and a sample of this substance was sent to TEL for analysis. The results revealed that the tank contained mineral spirits, etc. The second occurrence was in June/July 1995, when AMS had a water leak in its front yard. The water was tested to determine if it was clean city water, city sewer water, or something else. Mr. Reed also indicated that water from the AMS basement was never sent to TEL.

On Aug. 1, 1996, M. Weber called an AMS contractor, Alan Duff, who served as the project manager for the water clean-up and under drain replacement projects at AMS in 1995, and asked if he knew anything about AMS samples being analyzed by TEL. Mr. Duff provided the same information as the AMS worker. In addition, he stated that these water samples were surveyed and tested by AMS (using a portable survey meter and AMS' gamma spectroscopy system as a minimum) prior to being sent off-site, and they did not show any detectable Co-60.

RIII is aware that AMS used Quanterra Environmental Services, Earth City, MO, and Lockheed Analytical Services, Las Vegas, NV, for the radiological testing of all of its water samples during 1995.

Therefore, it does not appear that the AMS water samples analyzed at TEL in 1995 contained detectable Co-60.

Regarding hair loss caused by acute whole body doses of radioactivity, this is generally associated with the third or illness phase of the three radiation syndromes: (1) hematopoietic system syndrome (200 - 1000 rads), (2) GI tract syndrome (1,000 - 10,000 rads), and (3) CNS Syndrome (above 10,000 rads). Other characteristics of the illness phase include nausea, vomiting, diarrhea, fatigue, anemia, fever, anorexia, and petechial hemorrhaging on the skin.

Regarding hair loss caused by acute partial body doses of radioactivity, this is generally associated with doses from 300 to 600 rads approximately three weeks after the exposure. This hair loss is temporary. Radiation doses above 300 rads are generally accompanied by erythema, as a minimum. Acute doses above 700 rads result in permanent hair loss.

(An exposure rate of 200 rads/hour would be present at 1 meter from a 151.5 Ci point source of Co-60.)

It is highly unlikely that the alleged hair losses were caused by radioactivity, since the workers apparently did not suffer from the other symptoms known to result from the high doses discussed above.

Therefore, it does not appear that the alleged hair losses were caused by radioactively contaminated samples from AMS.

Therefore, DNMS recommends that no further action be taken with this allegation, other than reporting the above information to NEORSD.

- II. Inspector's Actions: The following areas at a minimum will be reviewed during the inspection into the above mentioned concern and/or peripheral issue.

A. Objective

B. Methods

1. Persons to be contacted:
2. Documents and/or activities to be reviewed:
3. Time period to be covered:
4. Locations/specific areas to visit:
5. Other areas (specify):