

December 15, 1994

MEMORANDUM TO: Robert W. DeFayette, Director  
Enforcement and Investigation Coordination Staff

FROM: John A. Grobe, Chief  
Nuclear Materials Inspection Section 2

SUBJECT: ALLEGATION FOLLOWUP - ADVANCED MEDICAL SYSTEMS, INC.  
AMS NO. RIII-94-A-0162

During a telephone conversation between Northeast Ohio Regional Sewer District representatives and members of the Region III office on September 19, 1994, it was alleged that Advanced Medical Systems (AMS) was illegally discharging radioactive material into the sanitary sewer system. The allegation was forwarded to Donald Funk in a memorandum from Michael Kurth dated September 22, 1994. An allegation plan was developed by my staff and approved by the Allegation Review Board on October 3, 1994.

On October 11-12, 1994, an inspection was conducted at the AMS London Road facility. The inspection included a review of the subject allegation. The results of our followup to this allegation are provided below.

ALLEGATION: AMS has recently been illegally discharging radioactive material (cobalt-60) into the sanitary sewer system. The basis for the concern is: (1) the unusually large volume of water discharged from the facility in August and September 1994 and its fluctuation and (2) a 35 picocurie/l cobalt-60 concentration identified in a water sample collected by the NRC and sewer district on August 17, 1994, in the AMS interceptor downstream of the facility.

Note that the sewer district measured the volume of water being discharged from the facility on August 17 and September 16, 1994, by collecting discharging water in a five gallon container and timing its deposition rate with a watch. These results were then extrapolated for a 24-hour period. Consequently, the 12,000 and 10,000 gallon discharge rates determined by the sewer district are only rough estimates of the water volume used per day at the facility.

DRSS FOLLOWUP: According to the licensee, water usage at the London Road facility is limited primarily to use of toilets, urinals and sinks for sanitary and consumption purposes. Water is not used for decontamination purposes other than an occasional small quantity (few gallons) used to remove (wash off) skin contamination from facility personnel, who became contaminated during the course of their work. All personnel decontamination sink wash and shower water drain to a 200-gallon plastic tank located in the front basement of the facility. The small volume of contaminated washwater resulting from these infrequent events is allowed to remain in the plastic tank and eventually evaporate.

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The facility is normally occupied by 2-3 individuals for a single work shift. Based on the number of employees and water usage practices, typical daily water usage is expected to be only about 100-200 gallons. Billing records, however, show that water usage over the last two years has been considerably greater than expected, as described below.

The licensee receives water billing and consumption information from the City of Cleveland on a quarterly basis. Quarterly records for the London Road facility were reviewed by the inspector for the period July 1992 through June 1994. (The third quarter 1994 bill had not yet been received by the licensee.) The records show, with one exception, quarterly water usage to range from about 45,000 cubic feet during the fourth quarter of 1992 to 83,000 cubic feet for the first quarter of 1994. This equates to a daily use rate of 3740 to 6900 gallons per day. The exception occurred during the second quarter of 1993, when a total of 6000 cubic feet (about 500 gallons per day) was used. Billing records show total water usage for the 12-month period of July 1993 through June 1994, to be nearly twice that used during a corresponding period in 1992-1993.

According to the licensee, plumbing problems have plagued the facility for several years and were allowed to continue unrepaired. According to the licensee, the plumbing problems were continuous; however, their severity could fluctuate day-to-day. The problems worsened over the last 6-10 months. NRC inspectors have likewise been aware of some of these plumbing problems, including a continually flushing toilet and leaking urinal flush mechanism in the men's lavatory. The licensee attributes the unusually large volume of water used at the facility to the plumbing problems, and increases since mid-1993 to escalating problems. The reason for the relatively small volume of water used during the second quarter of 1993 is unknown.

A standard toilet continually flushing at about 50% of its normal flush rate will use roughly 3 gallons of water per minute or 4300 gallons per day. Therefore, the unusually large water usage at the London Road facility since 1992 appears to correlate with the known plumbing problems.

During an NRC inspection on July 7, 1994, the inspector noticed an unusually large flow of water discharging into the sanitary sewer system from the clean (non-radioactive) portion of the AMS facility. No liquid was observed to be discharging from that portion of the facility designed for release of liquid radwaste. The July 7, 1994 discharge was, at that time, attributed by the licensee to the aforementioned plumbing problems. That explanation was plausible since a stuck flush mechanism on the men's toilet was known to be a continuing problem.

On or about September 29, 1994 and continuing the week of October 3, 1994, a contractor repaired the plumbing problems known to exist at the facility. The work included installation of two new urinals to existing flush valves, and repair of a toilet flush valve. During the inspection on October 12, 1994, the inspector removed the manhole cover where discharges to the sanitary sewer system exit the London Road facility, and verified that discharges had ceased.

The inspector also observed the new plumbing fixtures and reviewed the plumbing contractors billing record. No evidence of recent water usage in contaminated areas was evident during tours of the facility.

The 35 picocuries/l water sample collected by the NRC and sewer district on August 17, 1994, was collected downstream of a known contaminated interceptor that resides on AMS property. Clean (non-radioactive) water discharged from sinks, toilets and urinals could become slightly contaminated as it flows through the contaminated interceptor and washes cobalt-60 off its surfaces. While the cobalt-60 discharges from the AMS lateral are not believed to be fully soluble, for comparisons purposes, a cobalt-60 concentration of 35 picocuries/l is about 0.1% of the current 10 CFR Part 20.2003 limit of 30,000 picocuries/l for release of soluble cobalt into the sewer system.

Additional water samples collected by the NRC from the AMS interceptor on September 20, 1994 did not show cobalt-60 above the Region III lab instrumentation's lower limit of detection or approximately 10 picocuries/l. Inspection Report No. 030-16055/94003(DRSS) provides the results of recent NRC water sampling from the AMS interceptor. The report describes one apparent violation for disposing of licensed material into the sanitary sewer system that is not soluble or readily disposable biological material in water. The associated enforcement action is under consideration by the NRC.

**CONCLUSION:** Base on the August 19, 1994 sample collected by the NRC and sewer district, the allegation that cobalt-60 in a form not permitted under NRC regulations to be discharged to the sewers is substantiated. One apparent violation was identified as described in Inspection Report No. 030-16055/94003(DRSS). The recent cobalt-60 discharge into the sewer system appears to be the result of previously existing contamination within the AMS interceptor outside the facility. There is no evidence to suggest that recent interceptor discharges emanated from within the AMS building. This contamination appears to be washing-off of interceptor piping surfaces. Nevertheless, this matter is a violation of NRC requirements and subject to appropriate enforcement action. The unusually large volume of water used at the AMS facility over the last couple years appears attributable to the known continuing plumbing problems.

We plan no further followup regarding this allegation and consider this matter closed at this time. If additional information indicating possible discharges of radioactive material from within the AMS facility is obtained, the matter will be addressed. Any questions concerning this matter can be directed to me or Mr. Wayne Slawinski.

cc: W. Axelson  
D. Funk

DOCUMENT NAME: B:AMS.ALG (RJCI-disk)

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OFFICE	RIII	E	RIII	E	RIII	E	RIII	E
NAME	Slawinski		Madera		Berson		Grobe	
DATE	12/5/94		11/12/94		12/15/94		12/15/94	

OFFICIAL RECORD COPY

Dec 16, 1994  
~~January 10, 1994~~

## ADVANCED MEDICAL SYSTEMS, INC.

### STATUS OF WORK ITEMS

#### Inspection Issues

##### Status of Temporary Restraining Order regarding sewer discharges

- \* TRO issued in federal court 12/14 which retains plug, but allows the discharge of roof water.
- \* All roof water tanks have been discharged to sewers and have been removed from the property.
- \* Two 3000 gallon tanks and one-third of a third tank have been filled from pumping the manhole during December. Two-thirds of the third tank and a fourth 3000 gallon tank remain available for future pumping after a thaw or rain.
- \* Manhole water level is being monitored every day and has been slowly decreasing. Examples of the level on certain days over the last month are listed below:

12/12	53 inches	(high)
Pumping to Tanks		
12/28	30 inches	
12/30	27 inches	
1/4	28 inches	
1/6	26 inches	
1/10	25 inches	

- \* Basement water level is being monitored at the foot of the front sumpwell on a daily basis. Water level is approximately two inches and has increased approximately 1/4 inch over the past two weeks.

WHUT room analysis complete and will be forwarded to us by 1/31 with revised renewal package and Decommissioning Financial Assurance Plan.

Front plug milling - Aleron and its subcontractor, a Chicago based engineering firm who is familiar with nuclear work, is finalizing its proposal to mill out front plug. SEG will also be sending a proposal. After proposals are received and the contract is awarded, a schedule will be established.

GE 500 cask with 12,000 Ci of contaminated non-leak tested sources in limbo - bolted and stored in overpack in secured warehouse. SEG and Aleron is making a proposal for repackaging and shipment. J. L. Shepard remains interested in the material.

##### Hot cell radiological conditions:

Hot cell general area - 12 R/hr  
Front plug general area - 18 R/hr  
Several hot spots ranging from 10s of R/hr up to 200 R/hr  
Contamination into the millions of dpm per 100 cm<sup>2</sup>

SEG will be submitting by 1/31 a proposal to develop scenario for emergency drill. Expect the drill could be accomplished during the second calendar

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quarter (not third quarter as stated in NOV response).

Meeting with AMS to discuss 11/94, 12/94 and CAL response will be conducted 1/11.

NRC structural assessment of AMS ongoing. First site visit 10/12. No significant issues identified. Second site visit necessary and will be scheduled during January

#### 10 CFR 2.206 Requests

- \* March 1993 - AMS to Pay for Remediation - Stein has lead and is drafting Commission options paper.
- \* August 1994 - Sewer Discharge Radiation Monitor - DeCicco drafting response - Needs Picker files from 1974-1979 time frame - We are supporting.

Letter from Cuyahoga County regarding emergency preparedness. Preparing response for Grobe signature (concurrence uber alles).

Mayor of Cleveland Ad Hoc Task Force on Emergency Planning regarding AMS progressing. Grobe met with Task Force on 12/16. AMS, State, County and City met on 1/3. AMS performing inventory of dispersible material for emergency planning purposes (does not include WHUT room, hot cell or source garden). State will do dose projection.

### Licensing Issues

Renewal submitted and was unacceptable. Response letter sent. Licensee agreed to resubmit by January 31, 1995.

Hearing requested by NEORSD. OGC attorneys assigned (Holler and Bordenick). Interfaces established and familiarization briefing scheduled for 1/12.

### NEORSD and Effluent Issues

NEORDS/AMS Lawsuit - State lawsuit dismissed. Federal lawsuit likely to be filed. NRC/Region III involvement not defined at this time.