



ENVIRONMENTAL EVALUATION GROUP

AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

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April 7, 2000

Dr. Inés Triay
Manager
Carlsbad Area Office
U.S. Department of Energy
P.O. Box 3090
Carlsbad, NM 88221-3090

Dear Dr. Triay:

Attached is the EEG observer report on the WWIS surveillance conducted March 13-15, 2000. WID obviously needs to ensure that documents for this otherwise well-run component of the WIPP program are kept up-to-date.

One part of the attachment to the report questions the rationale for performing hydrogen/methane analysis of headspace gas samples, and notes that there appears to be no requirement in current CAO documents for doing so.

Sincerely,

Robert H. Neill
Director

RHN:BAW:ss:js
Enclosure

cc: S. Zappe, NMED
M. Eagle, EPA
B. Mackie, WIPP Task Force

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MEMORANDUM

DATE: April 05, 2000
TO: Robert H. Neill, Director
FROM: Ben Walker, QA Specialist *BW*
SUBJECT: WWIS Surveillance, March 13-15, 2000

I observed a CAO surveillance of the WIPP Waste Information System (WWIS) March 13-15, 2000. Two auditors conducted the surveillance; I was the sole observer.

While the WWIS system appeared to be well-organized and operated, two major draft CARs were written during the surveillance. Documentation for the system had not been kept up, resulting in procedures that referenced documents no longer in use and practices no longer used. Software QA documents had also not been updated as changes to the software system were instituted. Both CARs are significant conditions adverse to quality with possible repercussions from WIPP regulatory agencies.

A major indication of the failure to update WWIS documentation were the many references to the CAO QAPP (CAO 94-1010). An announcement of the impending cancellation of the QAPP was sent out November 3, 1999. There was also a 30-day lapse between approval of the WIPP Hazardous Waste Facility Permit (HWFP) and its implementation, in part to allow WIPP organizations time to update programs, that was apparently not applied to the WWIS documentation. However, there were other discrepancies in the documentation, most of which had not been updated since the WWIS came on line in 1997. Consequently, in order to meet newer policies and requirements, the written procedures were occasionally not being followed. WID personnel were aware of the problem, and had begun preliminary efforts to upgrade the WWIS documentation.

The software draft CAR resulted from a failure to keep life cycle documentation up to date, as required by NQA-2 Part 2.7; software versions in use were several changes ahead of some of the documentation.

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The surveillance team had developed extensive checklists, and were not only well-prepared for the surveillance but quickly identified and pointed out the nonconformances listed above. However, the WID's own QA program could have easily identified these same problems had the NQA, CAO, and WID required assessments of the WWIS been regularly performed.

There were other problems that came up during the surveillance that may or may not become a part of the official surveillance report. These are described in the following attachment.

BAW:ss

Attachment

Attachment--WWIS Surveillance, March 13-15, 2000

Interface Between CAO Certification and the WWIS

There appears to be a weakness in the interface between the WWIS administrators at WID and the CAO generator site approval/disapproval process. The WWIS data administrators need to know which waste characterization sites are currently authorized to ship wastes and what waste characterization processes and equipment are acceptable from these sites, in order to adjust the WWIS look-up tables for data acceptance. While the initial certification of sites and processes seems to be efficiently transmitted to the WWIS administrators, later changes--particularly decertification information--may not reach the WWIS. When a process is decertified because of audit findings, or failure in the Performance Demonstration Program, there should be a fail-safe mechanism for ensuring that the WWIS will contain the proper information so that inappropriate data will not be accepted.

Currently the limited number of certified generator sites, and the few personnel involved at both CAO and WID, make it unlikely that problems have occurred to this point. However, WWIS administrators apparently received no official notice of a change of status from the suspension of certification approval for a generator site found to have significant problems in 1999--data administrators were aware of the concerns over the site, but not through a formal process. As more sites begin shipping and more WWIS data administrators are trained the possibility that improperly certified data will be allowed by the WWIS will increase. CAO should consider developing a process that ensures that the WWIS contains the most up-to-date generator site certification data.

WWIS Hydrogen and Methane Analysis Data

The following comment was in the WWIS data for each of 10 drums from the first post-HWFP shipment from RFETS, which had arrived just previous to the surveillance (quoted from the data for drum RFD19003):

HOLDING TIMES EXCEEDED FOR INITIAL HYDROGEN/METHANE ANALYSIS due to instrument problems. Requirement is an administrative requirement and does not affect data quality. See discussion in method 510.1.

Initially the surveillance team was told that the data was acceptable because of a March 22, 1999, letter from CAO allowing acceptance of several RFETS analytical batches for which holding times were exceeded in mid-1998. It was later pointed out that an additional analysis of headspace gases performed on January 10, 2000, from samples taken January 06, 2000, was also in the listed WWIS data. After some consideration, I have the following three comments:

1. Under the current waste characterization program, the acceptance of the shipment is valid only on the basis of the January 10, 2000 data. The holding-time-exceeded data likely should not have been included in the data submitted to the WWIS. Rather, it should have become a part of the acceptable knowledge for the drum, and kept at RFETS as such.

2. Method 510.1 is cited in the WWIS data as the method used for the hydrogen/methane analysis on January 10, 2000 for drum RFD19003, and likely for all the other waste containers in the shipment. Method 510.1, Mass Spectrometry Determination of Hydrogen and Methane in Waste Containers, is found only in the Transuranic Waste Characterization Sampling and Analysis Methods Manual, DOE/WIPP-91-043, which was canceled at the same time as the QAPP.

This appears to be one of the complications that was not caught in the wholesale dropping of requirements documents in the recent makeover of the WIPP waste characterization program. If hydrogen/methane analysis is to be performed it should be performed according to documentation that are still viable. The CAO should consider resurrecting both Method 510.1 and also 520.1, Gas Chromatography Determination of Hydrogen and Methane in Waste Container Headspace in some fashion, or notify generator sites that they should use other documented and well-established methods for the analysis.

3. A larger hydrogen/methane analysis issue is why the data is collected and reported at all. None of the four upper-tier documents that currently establish CAO requirements for waste characterization--the CAO QAPD, the HWFP, the TRUPACT-II SARP, and the WAC--require it. The canceled QAPP listed only the 40 CFR 268 Land Disposal Restrictions (in Table 1-3, p. 1-26), from which the WIPP was exempted by the 1996 Land Withdrawal Act Amendments. There seems to be no requirement for hydrogen/methane analysis.

There also may be no scientific rationale currently for performing hydrogen/methane analysis. Headspace gas samples that are analyzed for hydrogen and methane are taken only from the area of a waste container that has filtered access to the exterior environment. Hydrogen and methane are both small, lighter-than-air molecules that will readily diffuse through the filters--the filters are on the drums solely to allow this process to occur. While the analysis might indicate malfunctioning filters, it certainly would not be a reliable method for doing so. Containers which do not have a filter at the time of headspace gas sampling have one put in at the time of sampling, and the measurements will have no real meaning within a short period of time after the samples are taken.

The only substantive concern from these gases is buildup in a sealed TRUPACT-II; the extensive decay heat considerations in the TRUPACT-II SARP are designed to ensure that hydrogen levels in the packaging remain below explosive limits. The TRUPACT-II SARP also notes that methane can be produced by biological activity on cellulosic material, but also notes that "Even under conditions designed to promote microbial proliferation, these compounds degrade very slowly, if at all" (p. 3.6.5-2).

There appears to be neither a requirement nor a clear rationale for hydrogen/methane analysis of headspace gas samples. CAO should reconsider the need and cost/benefit of this portion of the waste characterization program.

WAC Exceptions in the WWIS

A pertinent example of the sort of problem that could arise from the failure to update the documentation is found in the Software System Design Description, Section 2.2.3.c (p. 12):

WAC Exception. A generator/shipper may request an exception to a limit or edit check. After approval of the WAC exception by the DOE/Carlsbad Area Office (CAO) and a WIPP Unreviewed Safety Question Determination, the data administrator will update the WAC Exception Table with a WAC exception number, package identification, and the new limits for the field allowed the exception.

While it is possible that the CAO review would intercept changes to WAC limits in regulatory areas there is apparently no documented methodology to ensure that such checks would be made. There are some WAC limits for which no exceptions should be made, and others for which only under specifically defined conditions should exceptions be allowed. The WAC exception process should either be more strictly defined and documented or dropped from the program.