UNCONTROLLED

WEST VALLEY NUCLEAR SERVICES CO., INC.

ANALYTICAL CHEMISTRY METHOD
ANALYTICAL AND PROCESS CHEMISTRY

ACM MOIST-4101, Rev. 1
Effective Date: 06/28/89

PERCENT MOISTURE RADIOCHEMISTRY LABORATORY

Approved by:

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Part I

1.0 PURPOSE

This method determines the amount of moisture in radioactive samples.

2.0 APPLICATION

The present use for this method is soil samples, sludge samples and other samples which are partially water.

3.0 DISCUSSION

A weighed sample is heated to evaporate the water portion and weighed again. A difference is found divided by the initial sample weight. That number is then multiplied by 100. This is the percent moisture of sample. Each sample is done in duplicate.

4.0 REFERENCES

4.1 ACP 7.1 CONTROL OF EQUIPMENT
4.2 ACP 7.2 LABORATORY SAFETY
4.3 ACP 7.4 HANDLING RADIOACTIVE MATERIALS
4.4 ANNUAL BOOK OF ASTM STANDARDS VOLUME 11.01, D-1888

Part II

5.0 APPARATUS

NOTE: All equipment is calibrated and controlled per ACP 7.1.

5.1 Hot Plate

5.2 Dessicator

8910260304 891025
PDR PROJ
M-32 PDC

5.3 Mettler AE163 Balance

5.4 Stainless Steel Planchette

5.5 Petri Dishes

6.0 REAGENTS AND STANDARDS

N/A

7.0 SAFETY PRECAUTIONS

7.1 When handling radioactive samples, use the standard precautions outlined in ACP 7.2 (laboratory safety).

7.2 When handling radioactive samples, use the standard precautions outlined in ACP 7.4 (handling radioactive materials).

8.0 RECORDS

8.1 Record the data on the percent moisture worksheet.

9.0 CALIBRATION AND CONTROL

9.1 The measurement data and sample identification shall be recorded on the worksheet (Attachment A). The final result shall be recorded on the analytical request sheet.

10.0 PROCEDURE

10.1 Obtain the weight of a planchette in a covered petri dish and record it as the TARE dish weight.

10.2 Place a clean towel wipe in the hood and the planchette on the towel wipe (keep the petri dish out of the hood).

10.3 Put a representative portion of sample on the planchette (approximately 5-10 grams).

10.4 Carefully remove the planchette to the petri dish and cover.

10.5 Weigh the sample, planchette and petri dish; record GROSS wet weight.

10.6 Repeat Steps 10.1 through 10.5 for duplicate sample.

10.7 Place both planchettes on a hot plate set on medium-low.

10.8 Allow to dry for a minimum of one hour, or longer to insure complete drying of sample.

10.9 Remove from heat, allow it to cool momentarily before placing it in the petri dish.

10.10 Place it in the petri dish and then place the petri dish in the desiccator to cool to room temperature.

10.11 After sample reaches room temperature, (about ten minutes) weigh the sample and record the GROSS dry weight for the dry sample.

10.12 Calculate per Section 11.0.

11.0 CALCULATIONS

To obtain NET wet sample weight:

	GROSS WET	g
-	TARE DISH	g
	SAMPLE NET	g

To obtain NET dry sample weight:

	GROSS DRY	g
-	TARE DISH	g
	DRIED SAMPLE NET	g

To obtain the percent moisture:

$$\frac{\text{(SAMPLE NET-DRIED SAMPLE NET)}}{\text{SAMPLE NET}} \times 100 = \text{\% MOISTURE}$$

To obtain average percent moisture:

$$\frac{\text{\% Moisture (sample \#1)} + \text{\% moisture (sample \#2)}}{2} = \text{RESULT(\% MOISTURE)}$$

12.0 ATTACHMENTS

12.1 ATTACHMENT A - PERCENT MOISTURE WORKSHEET

ATTACHMENT A

PERCENT MOISTURE WORKSHEET

SAMPLE NAME _____ LOG NUMBER _____

SPECIAL INSTRUCTIONS _____

_____

_____

BEFORE DRYING		AFTER DRYING	
SAMPLE NUMBER	_____	SAMPLE NUMBER	_____
GROSS WEIGHT	_____G	GROSS WEIGHT	_____G
TARE WEIGHT	_____G	TARE WEIGHT	_____G
SAMPLE WEIGHT	_____G	SAMPLE WEIGHT	_____G
SAMPLE NUMBER	_____	SAMPLE NUMBER	_____
GROSS WEIGHT	_____G	GROSS WEIGHT	_____G
TARE WEIGHT	_____G	TARE WEIGHT	_____G
SAMPLE WEIGHT	_____G	SAMPLE WEIGHT	_____G

CALCULATIONS:

$$\frac{(\text{WET WEIGHT}) - (\text{DRY WEIGHT})}{(\text{WET WEIGHT})}(100) = \%\ \text{MOISTURE}$$

SAMPLE NUMBER _____

$$\frac{(\quad\quad)-(\quad\quad)}{}(100) = _____\ \%$$

_____% MOISTURE AVERAGE

SAMPLE NUMBER _____

$$\frac{(\quad\quad)-(\quad\quad)}{(\quad\quad)}(100) = _____\ \%$$

ANALYST _____ DATE _____ TIME _____

APPROVED _____ DATE _____ TIME _____

Calibrated Instruments Used: _____