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RADIATION SURVEY REPORT

Site: 1 Orient Way
N. Caldwell, NJ

Date of Site Work: 3/7/03 Date of Report: 3/18/03

SUMMARY:

Personnel from CoPhysics Corporation and Radiac Environmental Services, Inc conducted radiation measurements in a private residence (1 Orient Way, N. Caldwell, NJ) as part of a USEPA-sponsored cleanup of various types of hazardous and radioactive materials. The materials had been accumulated by the owner of the property who had recently deceased.

Local and state authorities had found the radioactive materials in the bathroom medicine cabinet. CoPhysics personnel surveyed the materials using hand-held meters, wipe tests for leakage, and gamma spectroscopic measurements for identification and quantification. Personnel packaged the materials in a USDOT specification 5-gallon steel pail and shipped the materials to Radiac Environmental Services, Inc. in Brooklyn, NY for solidification in cement. After solidification, the materials will be shipped to the Chem-Nuclear radioactive waste disposal facility in Barnwell, SC.

INSTRUMENTATION:

The following instruments were used:

Instrument	Serial #	Detector	Serial #	Calibration Date
1. Ludlum Model 12	83334	44-2 NaI probe	A83334	3/4/03
2. Ludlum Model 12	83924	44-9 GM probe	080484	2/8/03
3. Ludlum Model 2929	126116	43-10-1 alpha beta counter	129246	3/4/03
4. Aptec Multichannel Analyzer	N/A	Bicron 2x2 NaI detector	N/A	12/2/02

RESULTS

Preliminary readings before packaging showed about 30 uR/hr in front of the sink of the bathroom.

The interior of the medicine cabinet and the radioactive materials containers were wipe tested and visually inspected. No loose contamination was found (see wipe test results in Table 1).

Gamma spectroscopic analysis and visual inspection were used to identify and quantify the materials as follows:

#	Description	Radionuclide	Quantity
1	< 1 gram of white granules	Ra-226	0.13 uCi
2	luminous watch hands	Ra-226	0.39 uCi
3	smoke detector source	Am-241	5 uCi
5	2" tupperware container of thorium oxide	Th-232	2 uCi (18 g)

Other items in the cabinet included 2 small lead containers (inventory item#4) and a small gravimetric balance (inventory item#6). These items were found to be free of any radioactive contamination. Inventory item#7, a black button source (probably a radioactive instrument calibration source), had been removed by the NJDEP and was not inspected by CoPhysics personnel.

After the materials were packaged, a confirmatory radiation survey was performed. Results of the survey are summarized as follows:

1. A GM scan for residual surface contamination in the cabinet, vanity, bathroom floor, and adjacent hallway floor showed only background readings, i.e., no contamination was detected.
2. A gamma scintillation scan of the interior of the house showed only background readings of 8 to 10 uR.hr, i.e., no additional radioactive sources were found.
3. Wipe test results are shown in Table 1 and show no detectable residual contamination.

TABLE 1 – Wipe Test Results

#	Description	net alpha dpm/100 sq.cm	net beta dpm/100 sq.cm
1	scale in cabinet	< 7	< 52
2	medicine cabinet top shelf	< 7	< 52
3	medicine cabinet 2nd shelf	< 7	< 52
4	medicine cabinet bottom shelf	< 7	< 52
5	sink basin	< 7	< 52
6	bathtub ledge	8 ± 5	< 52
7	empty pig	< 7	< 52
8	inside sink base cabinet	< 7	< 52
9	empty pig labeled "55T9"	< 7	< 52
10	floor - front of toilet	< 7	< 52
11	floor – front of vanity	< 7	< 52
12	hall floor outside bathroom	< 7	< 52
13	hall floor middle	< 7	< 52
14	hall floor outside laundry room	< 7	< 52
15	laundry room floor	< 7	< 52

Limits: Release of facilities and equipment to the general public: 200 dpm / 100 sq.cm for thorium-232 (alpha emitter); 20 dpm / 100 sq.cm for radium-226 (alpha emitter) - ref: USNRC Regulatory Guide 1.86.

Questions regarding this project may be addressed to the undersigned.

Theodore E Rahon

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