General Services Administration - Region 9
525 Market Street
San Francisco, CA 94105

Date May 17, 1978

Reply to Attn of 9PBA, Mail Station 31 (Lynch)

Subject Radiological Laboratory, Hunters Point

To: 9PC, Mail Station 32

LFE Environmental Analysis Laboratories conducted a cursory radiologic examination of Building 815 at Hunters Point to determine if there is any residual radiation resulting from it's original use and if so, levels.

As outlined in the attached report, several "hot" spots were found and decontamination is required prior to use.

Additionally, a thorough radiologic survey of the building duct work appears warranted if the building is to be used. We recommend the building be thoroughly surveyed and decontaminated.

People having access to the building should be alerted to the potential hazard and warning signs should be posted.

ORMOND B. STULL
Chief, Accident & Fire Prevention Branch
Buildings Management Division
Public Buildings Service

Attachment

	NO.									
C		9PC	9P3L	9P3D						
M	Action									
D	Initial									
	Date									

RESULTS OF RADIOLOGIC SURVEY AT BUILDING 815, HUNTERS POINT

INTRODUCTION

This is to inform you of the results of the radiological survey conducted by LFE Environmental Analysis Laboratories at the main laboratory building, Building 815, Hunters Point Naval Shipyard. The survey was conducted from April 18, through April 21, 1978, by Michael Trent, Health Physicist and Radiation Safety Officer, and Gerry Gella, Technician, escorted by Mr. Styvendor of the Navy.

METHOD

A brief room-by-room survey was conducted using Technical Associates PUG-1 survey meters with P-11 Geiger-Mueller probes. This combination was primarily used to determine the location of beta-gamma radiation sources and as a qualitative indication of any elevation in the natural background. In addition, an Eberline PAC-ISAGA, with an alpha scintillation probe, was employed in the measurement of any suspected sources of alpha radiation.

Wipe tests were made at 76 locations in the building and returned to our Richmond, CA laboratory for analysis. The wipes were divided into those of known areas of contamination, as located by the survey meters, and those made as background checks. The techniques and prescribed values of surface contamination employed were those set forth in International Atomic Energy Agency, Technical Reports Series No. 120, "Monitoring of Radioactive Contamination on Surfaces" (1970).

RESULTS

The results of this cursory radiologic survey are unremarkable with the exceptions listed below. These exceptions were more extensively examined to result in some information on the amount of contamination, the isotopes present, whether fixed or removable, and to determine whether additional corrective action should be recommended.

1. ROOM 1109

This room, used as a storage area, showed hot spots of beta-gamma. Contamination ranging up to approximately 20,000 cpm/20 cm^2 was observed. Taking into account the most probable isotope, ^{137}Cs, as determined by a gamma spectrometer

count of a wipe test, and the efficiency of the PUG instrument for this isotope (approximately 50%), and the surface area of the probe (20 cm^2), an approximate value of 1350 pCi/cm^2 was derived. A total of eleven wipe tests were taken in this room. The highest, assuming a removal factor of 10%, and a detector efficiency of 30%, indicated approximately 135 pCi/cm^2 of removable beta activity. This is approximately 30 times the prescribed limit for removable beta contamination in an uncontrolled area.

Removable alpha activity was approximately 5 to 10 times the prescribed limit. Because of the activity levels found and the history of the room, it received the most attention during the survey.

2. CONDITIONED AIR DUCTING

The second problem concerns the heating and air conditioning ducting. In many rooms (both offices and laboratories), a fine powdery material appears to have fallen from the ceiling air conditioning and heating intakes onto the floor. A total of 16 samples were taken of this material in various rooms throughout the building. The material was counted for gross alpha and gross beta-gamma at the laboratory. Gross beta-gamma values as high as 300 pCi/g were measured. A gamma spectrometer count showed that the activity was due to ^{137}Cs.

Because of the nature of alpha radiation, only a qualitative estimate of alpha contamination was obtained using the wipe test method. Most of the samples gave low but positive alpha readings.

3. ROOM 2153 HOOD DUCTING

The interior of the ducting showed hot spots of approximately 90 pCi/cm^2 of beta-gamma activity. The ducting appears to be associated with filtration of the laboratory fume hoods. The fume hood ducting is still in place throughout the building, but was only easily accessible at this point.

4. OTHER CONTAMINATION

The following additional areas of contamination were observed:

a. The top surface of a desk stored in room 135 has approximately 90 pCi/cm^2 beta-gamma activity.

b. A sink in room 218 has approximately 45 pCi/cm^2 beta-gamma activity.

c. A bench in room 471 has approximately 90 pCi/cm² beta-gamma activity.

d. The floor in room 631 has a hot spot of approximately 2700 pCi/cm² beta-gamma activity of which approximately 70 pCi/cm² was removable.

e. The fume hood in room 670 has spots of activity ranging up to 45 pCi/cm².

CONCLUSIONS

The following conclusions are based on the results of this cursory survey:

1. More extensive decontamination is required in room 1109. The presence of removable contamination is not acceptable. At a minimum, all floor tiles should be replaced, contaminated areas of the bench removed and the cave floor covered.

2. The ducting discussed above under Item 2, appears to be seriously contaminated with ^{137}Cs activity. This activity appeared in several rooms and therefore appears a systematic source of existing and continuing contamination. Since this ducting is, in general, not open for thorough detailed examination, the extent of this problem cannot be delineated at this time. This ducting should be further examined and if necessary, cleaned and/or replaced.

3. The fume hood ducting is largely intact and thus was not open for a thorough radiologic evaluation. In a few rooms, the hoods had been removed and the open ducting was available for examination. The interior of the ducting was slightly above room background as were wipe tests taken from the ducting. The activity found inside the ducting in room 2153 indicates that some activity remains. Unless the fume hoods are to be used in the future, or a more thorough survey indicates that the system is clean, the ducting should be sealed off or removed.

4. Hot spots as described above under Item 4, should be corrected as follows:

a. The parts of the desk in room 135 that are contaminated should be removed to hot waste and the desk discarded.

b. The sink in room 218 should be decontaminated or removed.

c. Areas of the bench in room 471 should be decontaminated or discarded.

d. Contaminated tiles in room 631 should be removed to hot waste.

e. The fume hood in room 670 should be decontaminated or the activity fixed in place by painting and its location noted.

Because of time limitations, undoubtably some other minor areas of contamination were overlooked in this cursory survey. If available, records of the decontamination work performed in the building should be reviewed to assertain if the work included a detailed analysis and survey of both the air conditioning ducting and the fume hood systems.

TABLE I

ACCEPTABLE SURFACE CONTAMINATION LEVELS

NUCLIDE[a]	AVERAGE[b c]	MAXIMUM[b d]	REMOVABLE[b e]
U-nat, U-235, U-238, and associated decay products	5,000 dpm α/100 cm^2	15,000 dpm α/100 cm^2	1,000 dpm α/100 cm^2
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm^2	300 dpm/100 cm^2	20 dpm/100 cm^2
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1000 dpm/100 cm^2	3000 dpm/100 cm^2	200 dpm/100 cm^2
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5000 dpm β-γ/100 cm^2	15,000 dpm β-γ/100 cm^2	1000 dpm β-γ/100 cm^2

[a] Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.

[b] As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[c] Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

[d] The maximum contamination level applies to an area of not more than 100 cm^2.

[e] The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.