

VIEQUES ISLAND ENVIRONMENTAL SURVEY

BRIEFING OF PUERTO RICO SECRETARY OF HEALTH

- Survey conducted from June 6 - 15
- Survey performed by NRC staff with assistance of Puerto Rico Radiological Health Division personnel
- Direct measurements and environmental samples obtained in Live Impact Area, Atlantic Fleet Weapons Training Facility, Eastern Maneuver Area and public areas. Sample locations indicated on map.

Summary of Collected Samples

Area	Soil	Vegetation	Water	Sediment
LIA	18	1	0	0
EMA	37	8	4	4
VPA	29	8	3	2
Total	84	17	7	6

total
114

- Direct measurement and environmental sample results indicated that some low levels of depleted uranium contamination do exist in the Live Impact Area in the holes from which the Navy recovered depleted uranium penetrators. The contamination is not extensive and is limited to the soil remaining in the holes. Total uranium detected in these soil samples ranged from 4.02 to 92 picocuries per gram based upon alpha spectroscopy analysis and it was identified as depleted uranium.
- The only radioactive materials detected outside of the holes in the Live Impact Area were naturally occurring materials (uranium-238 and decay products, thorium-232 and decay products, and potassium-40). The total uranium for all soil samples other than those from the holes in the Live Impact Area ranged from approximately 0.2 - 2.0 picocuries per gram based upon alpha spectroscopy analysis and was identified as natural uranium. This is the normal range of activity found in soil samples.
- The differences in the ambient dose rates detected (0.5 - 6 microrem/hour) throughout the island are due to the differences in the concentrations of natural potassium-40 in the different soil types.
- Members of the public could only receive measurable dose from the DU penetrators fired into the Live Impact Area if they entered the Live Impact Area and either picked up DU penetrators from the surface of the ground or dug up the DU penetrators from under the ground.



POTENTIAL QUESTIONS AND SUGGESTED ANSWERS

1. What about the people who lived in the range area for a year before they were removed? How do you know they were not exposed?
 - contamination limited to the soil immediately adjacent to where the DU penetrators were found
 - no DU contamination was detected in the samples obtained at the four protester camps
 - only means of exposure was to pick up a DU penetrator; we have no information that this was done.
2. What dose would someone receive if they picked up a DU penetrator?
 - The approximate skin dose rate to someone holding a DU penetrator would be 0.39 rad per hour. There are no public dose limits for skin exposure, however, the occupational skin dose limit is 50 rem. A person would have to hold the DU penetrator for over 128 hours to exceed this limit.
3. Why do the environmental dose rates vary so much?
 - as shown in Table 3 of Attachment 2 of the report, the ambient radiation dose rates vary as the concentration of naturally occurring potassium-40 varies. The levels of other naturally occurring radioactive materials do not vary as much and do not contribute as much to the measured dose rate.
4. Why didn't you sample the ocean water and sea life around the island?
 - Our first priority was to establish if the DU present in the Live Impact Area had been transported to the immediate environment around the firing range. If we found evidence that the DU had been transported away from the immediate impact area, then we would have followed the contamination trail to where ever it led. We found that the DU contamination was limited to the soil remaining in the holes from which the DU penetrators had been recovered and did not enter the surrounding area, including the ocean.
5. What about the contamination that remains in the holes and the DU penetrators that the Navy can't find? Is this a hazard? Will the Navy have to remove this soil and continue to look for the DU penetrators until they find all of them?
 - The amount of contamination remaining in the holes from which the DU penetrators were recovered is small and is not a potential hazard to anyone unless they ingest or inhale the contaminated soil. Since this area is a restricted area because of the other hazards associated with a live impact area (unexploded ordinance), members of the public should not be exposed to this contamination.

263
116
147

- The Navy has recently completed its third attempt to detect and remove the remaining DU penetrators. They have recovered a total of 116 penetrators. The NRC performed an inspection of this effort on September 11, 2000. The Navy will review its contractors report regarding this recent effort and determine if there is evidence that additional, recoverable DU penetrators remain. The Navy disposed of the DU penetrators and the soil removed when the penetrators were recovered has been sent off Vieques for disposal as radioactive waste.
 - Before the NRC approves the Navy's release of the Live Impact Area for unrestricted use, the Navy must prepare and submit a dose assessment based on the amount of DU that remains in the Live Impact Area that demonstrates the area meets the unrestricted release criteria in 20.1402 (25 mrem/year to critical group and ALARA).
6. If the Navy drops explosive bombs on the area where this DU contamination remains, will it spread all over the island?
- Given the distance of the public from the Live Impact Area and the low activity level and volume of soil contamination, we do not believe that the dispersion of the contamination that may remain in the Live Impact Area by this means would endanger the public health and safety.

Coordinates
Samples

500% different in measurements