

# Revised Seafood Advisory Orote Landfill Site COMNAVMARIANAS, GUAM



August 2002

This Fact Sheet describes the investigation of potential contamination at Commander U.S. Naval Forces Marianas (COMNAVMARIANAS) Guam under the Installation Restoration (IR) Program. This is No. 13 in a series of informational flyers that will be issued periodically throughout the investigation.

## INTRODUCTION

This fact sheet provides updated information regarding the Seafood Advisory in the areas near the Orote Landfill Site (Figure 1). Previous sampling and analysis of fish near the Orote Landfill Seawall revealed polychlorinated biphenyl (PCBs), dioxins and chlorinated pesticides at levels that may pose an unacceptable health risk. The Navy, Guam Environmental Protection Agency (EPA), Guam Department of Public Health and Human Services and other regulatory agencies have moved quickly to provide press releases, public informational meetings, and a seafood consumption advisory. This consumption advisory conservatively extended from Orote Point south to Nimitz Beach because the lateral extent of contamination was not known. Recent seafood sampling and analysis, however, have confirmed that the area south of Rizal Beach can be removed from the seafood advisory. The Seafood Advisory area has therefore been revised to include only the area from Orote Point to the southern portion of Rizal Beach (COMNAVMARIANAS Fenceline) (Figure 1). Guam Public Health is now advising people to not eat seafood (e.g. octopus, seaweed, crabs, lobsters, fish, etc.) caught from within this area. The Navy is continuing to take a proactive role to determine the impact to seafood near the west side of the Orote Peninsula. This fact sheet will provide an update of the current Navy efforts, the risks to human health and environment as well as future plans for reducing potential risk to humans and the marine environment.

## BACKGROUND

The Orote Landfill Site occupies approximately 7.4 acres of land within Commander U.S. Naval Forces Marianas (COMNAVMARIANAS) on the southern portion of the Orote Peninsula (Figure 1). The Orote Landfill was used for disposal of residential, industrial, and construction wastes from approximately 1944 to 1969. The face of the cliff that partially borders the landfill was reportedly the most active disposal area. Flammable material was burned, and the ashes from these activities were buried on the cliff above the nearby

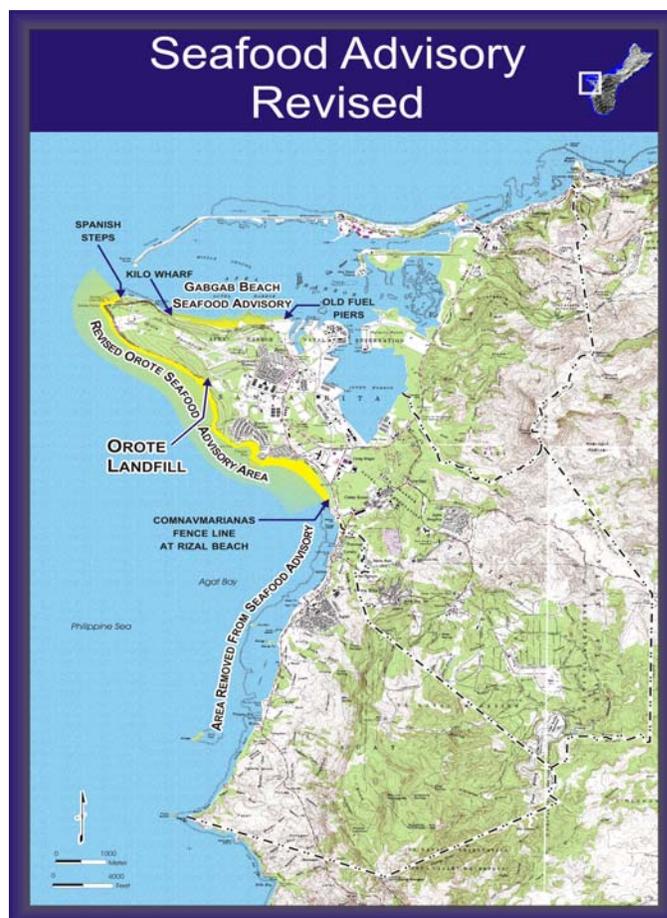


Figure 1. Revised Seafood Advisory Area

cove. Nonflammable material was either buried behind the cliff or bulldozed over the cliff onto the beach. Erosion of the landfill cliff further contributed to the large amounts of rusted metal and other debris found on the beach.

To prevent further erosion of the landfill cliff, the Navy implemented cleanup activities (seawall and landfill cap) to contain and restrict movement of landfill chemicals to groundwater. The Navy established a program to assess the effectiveness of the cleanup activities on the shallow marine environment offshore of the Orote Landfill. Analysis of samples collected during this effort indicated elevated concentrations of PCBs, dioxins and chlorinated pesticides in fish collected at the seawall (Figure 2) and

## THE PHASED APPROACH

The Navy, Guam EPA, U.S. EPA and other agencies have formulated a phased approach to address the concerns within the seafood advisory area. These phases are described below:

### **Phase I: Addressing Human Health Concerns and Refinement of the Seafood Advisory Area Boundaries**

In collaboration with USEPA, Guam EPA, Agency for Toxic Substances and Disease Registry (ATSDR) and other health organizations, the Navy proposed that additional sampling and analysis of seafood be conducted at the seawall. Since the boundaries of the impacted fish were not known, specific locations along the Orote coast were included in the sampling phase (Figure 3). The specific objectives of the additional sampling were to 1) determine if it is safe to consume seafood at other locations along the Orote coast and 2) if possible, refine the seafood advisory area.

A key component of Phase I was the participation of local regulatory agencies and Agat Bay residents. A seafood consumption survey was conducted in December 2001. Approximately 130 residents from 3 villages within the Agat Bay area (Piti, Santa Rita, and Agat) were asked questions about the types and amounts of seafood they eat. Data from the survey was used by public health officials to help determine potential health risks.

**Phase II: Associating Fish Contamination to Specific Sources;** results from Phase II will focus on linking fish contamination to specific sources. This phase may include sediment sampling or spring sampling in the near shore areas from groundwater and additional fish sampling. Documents that define a clear strategy for investigating the advisory area are currently being developed and will be finalized near the end of 2002. The results of Phase II sampling will be used to conduct a more comprehensive human health and ecological risk assessment. The assessment will help focus work for Phases III and IV.

**Phase III: Determine Source Area;** the investigation will then establish land source locations. This phase may include monitoring well installation to sample groundwater.

**Phase IV: Cleanup of Potential Sources;** once the information on PCBs sources are known, cleanup can be conducted if required.



*Figure 2. Sample Location Near Orote Seawall*

approximately 2,200 feet northwest of the seawall at Barracuda Rock. Consequently, a seafood advisory was issued that conservatively extended from Orote Point to Nimitz Beach. A phased approach to address the potential health concerns from consumption of contaminated fish was formulated by the Navy, USEPA, Guam EPA, and other regulatory agencies. The phased approach is outlined below. Phase I of the investigation has been completed and its results are the subject of this fact sheet. Phase II efforts are underway and the Navy will update the public as information becomes available.

### **PHASE I APPROACH**

The Phase I approach sampled territorial fish from nearshore environment along the Orote Coast from Orote Point to Façpi Point to determine the lateral extent of contamination and the associated health risks from consuming fish from within the area. To help assess this risk, it was also necessary to find out the seafood consumption practices of the local Guam population. The Navy therefore conducted a seafood consumption survey. Details of the two components of the Phase I effort are described below.

**NEARSHORE FISH SAMPLING** – Nearshore sampling locations extended at approximately 1/2-mile intervals northwest from Barracuda Rock to Spanish Steps and Gabgab Beach and southeast from the Orote Seawall to Façpi point (Figure 3). Three *Hiyok*, or Blue-banded Surgeon fish, and one *Gádao*, or Hexagon Grouper were collected at each of 15 locations along the Orote coast. These fish were chosen because they generally stay in one place and are widespread throughout the advisory area. Sampling locations and test species were determined with input from Guam EPA, the Guam Department of Aquatic and Wildlife Resources (DAWR), and other regulators.



**Figure 3. Seafood Sampling Locations**

**SEAFOOD CONSUMPTION SURVEY** – The goals of the seafood consumption survey were to:

- Provide Guam-specific information on types of seafood people eat, quantities of fish and other marine organisms ingested, frequency of ingestion, etc to validate the conservative exposure assumptions used in the preliminary screening risk assessment and to revise those assumptions if needed.
- Provide current data on the fishing and seafood consumption habits in a previously unstudied population.
- Assess the effectiveness of the Navy’s public outreach program.
- Provide study results to the public.

**PHASE I RESULTS**

Phase I efforts included a program to sample nearshore territorial fish and a seafood consumption survey. The results of these programs are detailed in the following sections:

**NEARSHORE FISH SAMPLING** – Based on USEPA guidance, the preliminary human health risk assessment shows that the levels of PCBs, dioxins and chlorinated pesticide levels in seafood from Turtle Rock (Neye

Island) to Orote Point may be unsafe to eat. Toxicologists have previously advised a ban on fishing from Orote Point to Nimitz Beach. The recent sampling however, indicates that chemical concentrations in fish south of Rizal Beach are safe for consumption. The Seafood advisory has therefore been reduced to include only areas from Spanish Steps at Orote Point to the southern portion of Rizal Beach (COMNAVMARIANAS Fenceline). The remaining advisory area from Rizal Beach to Orote Point will be subject to further study. The study is required to pinpoint source areas and more comprehensively assess the risk to human health and the environment.



**Figure 4. Navy and GEPA Fisherman During Field Activities**

**SEAFOOD CONSUMPTION SURVEY** – The results of the seafood consumption survey provide community-specific data on the types and quantities of seafood eaten, frequency of eating fish, and where people normally get their seafood. The data suggests that people living in the Agat Bay area eat a variety of seafood via a variety of preparation and cooking methods. Quantity of fish eaten per meal are higher than other previously studied Asian and Pacific Islander populations, but the frequency with which they eat those meals appear to be lower. The survey also indicates that the Guam communities near the advisory do not get fish from a single source. Fish are obtained from several sources including the supermarket, fisherman’s coops, family and friends and from roadside vendors.



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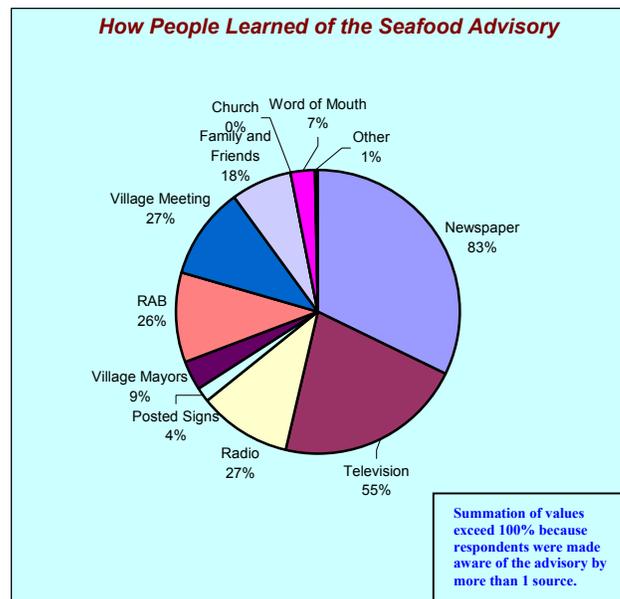
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**SELECTED RESULTS FROM THE SEAFOOD CONSUMPTION SURVEY**

Almost all of the people surveyed (95%) said they eat fish. Styrofoam models weighted to 4, 8 or 12 oz were shown to residents taking the survey as both a visual and weight cue for portion size. The table below shows the average results among the people surveyed who eat fish:

Question	Average Answer
How long have you eaten fish?	More than 40 years.
How many times do you eat fish each month?	8.4 times per month.
How much fish do you eat at each meal?	8.9 ounces at each meal.

**NAVY PUBLIC OUTREACH PROGRAM** – The Navy has worked diligently and quickly to provide the public and regulatory agencies with information regarding activities at the Orote Landfill site. The outreach program has included ads in the local newspaper and radio, warning/advisory signs at fishing locations within the advisory area, public meetings in the local communities and Restoration Advisory Board meetings. Results from the survey suggest that most outreach efforts were successful, but some areas might be improved. The majority of people were made aware of the advisory by a story in the newspaper, the radio, Navy public meetings, a television broadcast, or a combination of the above (Figure 5). Eighty-six percent of those surveyed were aware that a seafood advisory had been posted from Orote Point to Nimitz Beach before participating in the interview and approximately half of all respondents no longer ate fish from the seafood advisory area because of it. Greater than half of all respondents, however, continue their fishing and fish consumption practices irrespective of the seafood advisory.



**Figure 5. How People Were Made Aware of the Seafood Advisory**

Based on the risk management team’s recommendation, the Guam Department of Public Health and Human Services has reduced the seafood advisory to the areas South of Orote Point to the southern portion of Rizal Beach and added a seafood advisory for Gabgab Beach in Apra Harbor.

**FUTURE ACTIVITIES**

The Navy in conjunction with Guam EPA and other regulatory agencies are currently developing a strategy to investigate the Orote Seafood Advisory area under Phase II. The strategy will focus on more precisely delineating source areas for PCBs and other chemicals and developing a more comprehensive picture of risk to humans and the environment. Draft preliminary documents will be finalized near the close of 2002 and field activities are expected to begin in early 2003.

The Gabgab Seafood Advisory will be studied under a future investigation. Current studies will focus on the Orote Seafood Advisory Area.

**FOR MORE INFORMATION**

Contact the Commander U.S. Naval Forces Marianas (COMNAVMIANAS) at (671) 339-5207. Past studies and reports on Orote Landfill are currently available at the information repository at Nieves M. Flores Memorial Library in Hagatna