

NAPLES PUBLIC HEALTH EVALUATION - PHASE I REPORT EXECUTIVE SUMMARY

Introduction

For years, the Campania region of Italy has experienced numerous challenges associated with widespread illegal dumping of hazardous waste. More recently, the region has faced additional challenges with trash collection and uncontrolled burning of uncollected trash. In response to health concerns, Commander Navy Region Europe, Africa, Southwest Asia (CNREURAFSWA) requested that Navy and Marine Corps Public Health Center conduct a comprehensive Public Health Evaluation (PHE).

The PHE is being conducted in two phases. Phase I of the PHE began in early 2008 and involves the conduct of a screening risk evaluation (SRE). The purpose of Phase I was to determine whether there are any potential health impacts associated with exposure to surface soil, indoor air, tap water¹, and outdoor air to USN personnel residing in the Naples and Caserta Provinces of the Campania Region of Italy.

Study Areas

Since the area being investigated is very large, the region was divided into nine geographical study areas (see Figure 1). One hundred and thirty private rental residences and 10 U.S. Government-related locations were sampled for soil, soil gas, tap water, and irrigation water. In addition, outdoor air samples were collected from each of the nine study areas.

Risk Assessment Approach

This SRE was conducted in accordance with U.S. Environmental Protection Agency (USEPA) and U.S. Navy Risk Assessment Guidance. Environmental testing results were compared to USEPA Maximum Contaminant Levels – for tap water, USEPA Regional Screening Levels – for tap water, air, and soil, and USEPA National Ambient Air Quality Standards – for air.

The Phase I Report characterizes the potential health risks associated with living at a residence for 30 years. This is a conservative assumption that is protective of public health (typical tour lengths range from three to six years), but necessary to account for the number of unknowns

¹ Tap water refers to public water, private wells, and blended water sources. Blended water refers to non-permitted (illegal wells) that are connected to the public water supply system, resulting in blended public water and well water.

which make up the “environmental baseline” of the study area. Risk evaluation results for non-cancer and cancer risks were placed into one of two risk management categories: acceptable risk and unacceptable risk. In addition, risks for tap water were calculated two ways, assuming tap water was and was not used for normal household uses, such as drinking, cooking, making ice and brushing teeth.

Incremental Risk Results for the 130 Private Rental Residences

Forty-eight of the 130 residences had unacceptable risks, assuming tap water was used for normal household uses; 41 of the 130 had unacceptable risks assuming tap water was not used for normal household uses. Assuming tap water is not used for drinking, approximately 7% of residences sampled that obtained their tap water from a public source had unacceptable risks, while 81% of residences sampled that obtained their tap water from a private well or unknown source had unacceptable risks. The majority of unacceptable risks were associated with tetrachloroethene, fecal coliforms, total coliforms (including fecal coliform and *E. coli*) and nitrate in tap water. Study area 8 featured the highest number of residences with unacceptable risks. No residences in study areas 1, 3, 4, and 9 had unacceptable tap water risks.

Risks for soil and soil gas were typically acceptable with a few isolated exceptions. Phase I results for soil gas are considered preliminary since these samples were collected using a passive sample technique, which only indicates the presence or absence of soil gas. Phase II soil gas samples will be collected using a more accurate and reliable active soil gas sampling techniques.

Seventeen families residing in privately leased homes were relocated due to unacceptable risks which could not otherwise be mitigated by recommended use of bottled water, or by cleaning and disinfecting the residential water distribution system. In contrast, no relocations were necessary from government-related facilities.

Incremental Risk Results for U.S. Government-Related Facilities

Risks associated with tap water, soil, and soil gas were typically acceptable with few exceptions. Some unacceptable concentrations in tap water were detected at Parco Artemide (which is now closed), Parco Eva, Parco Le Ginestre, and a single NAVFAC-leased home. Some unacceptable soil concentrations, based on residential use, were detected at Capodichino, Gricignano Support

Site, JFC NATO and the U.S. Consulate; however, these samples areas are not used for residential purposes. One NAVFAC-leased home had unacceptable soil concentrations, which can easily be mitigated to eliminate risk. Preliminary results for soil gas were detected at Parco Le Ginestre, which will result in additional sampling in Phase II. Finally, some sites have irrigation wells, which are unacceptable if used for drinking water; they are used solely for irrigation. No relocations were required from any government-related facilities.

Uncertainties

There were uncertainties in Phase I of the SRE with regard to the representativeness of the analytical data, background concentrations of chemicals, exposure assumptions and toxicity values. In all cases where uncertainty existed in the assessment, assumptions and inputs were selected to ensure that site risks were not underestimated, and these uncertainties did not impact the confidence in the conclusions of the assessment. However, it is important to note that only Phase I of the Naples investigation has been completed and the purpose of this report is to evaluate existing data in spite of known data gaps.

Conclusions

For drinking water, multiple lines of evidence indicate a high degree of contamination of tap water in some areas for residences on private wells and, to a lesser extent, for those using a public drinking water source. This is especially true for residences on private wells. This is most likely due to the following:

- Low pressure in the public drinking water systems in some areas
- Practice, in certain areas, of illegal private wells and illegal interconnections to the public drinking water system resulting in blended water coming from the tap
- Improper maintenance and disinfection of domestic water holding tanks
- Lack of comprehensive use of backflow prevention devices in Italy
- Lack of compliance with existing backflow prevention laws by landlords
- Lack of compliance with private well laws used for drinking water by landlords and lack of enforcement by Italian regulatory agencies.

For ambient air, samples were collected on multiple days from each of the nine air monitoring stations over 30 days; no definitive conclusions can be made until one full year of data have been collected.

Risk Management Actions Implemented to Mitigate Risks

Consistent with the aggressive risk reduction approach taken by CNREURAFSWA and Naval Support Activity, Naples, risk management actions are implemented as risks are identified. The major risk management actions taken to date include:

- A variety of communications venues were developed to inform U.S. personnel, their families, and the Italian Government of the results of the PHE (e.g., Community Action Group, Websites, All Hands Emails, Panorama newspaper, town hall meetings, reports, Naval Hospital Environmental Information Center).
- An advisory was issued in 2008 to use only bottled water for all ingestion purposes (drinking, food preparation/cooking, ice-making, and brushing teeth).
- New lease provisions were implemented requiring landlords to show proof of either connection to the public drinking water system or a legal well, to clean and disinfect domestic water holding tanks semiannually, and to provide containerized water service from a Navy-approved vendor.
- All new leases were suspended in high-risk areas until further notice.
- Relocated 17 families in private residences whose homes had unacceptable risks that could not be mitigated.
- Shared PHE data summary and report with designated official Italian liaisons (the General Director of Civil Protection; the Assessorato alla Sanita'; and the Assessorato all'Ambiente) and the U.S. Consulate Naples.
- Briefed Chief of Naval Operations concerning the need for a Department of Defense overseas public health policy to address health hazard exposure and evaluation of environmental conditions, such as exist in Naples, Italy.