



Naples
Community
Health
Awareness

An important Public Health Evaluation is underway under the guidance of the Navy and Marine Corps Public Health Center. The Public Health Evaluation is designed to evaluate the potential short and long-term health risks associated with living in the Naples area as a result of inadequate trash collection, uncontrolled open burning of uncollected trash, and widespread dumping of waste, including chemical and other hazardous waste.

Launched in 2008, the Public Health Evaluation involves the collection of air, water, soil and soil gas samples from throughout the region to identify whether there are potential health risks.

For details and background information, visit the website listed at the bottom of this page.

Your Health: Facts for Navy Families in Naples

About: Overview of the Cancer Epidemiological Study

The U.S. Navy is committed to ensuring our families are safe while serving our country at home or overseas. The following information is provided as part of a wide-ranging effort to understand the health risks of our personnel and families living in Naples, Italy. Currently underway is a comprehensive Public Health Evaluation to assess potential short and long-term health risks associated with living in the Naples area (see sidebar). In line with our commitment to continually share important health information, we encourage you to review the following information.

What is the cancer epidemiological study?

The cancer epidemiological study “*Analysis of Environmental Exposures and Cancer Risk for U.S. Navy and Marine Corps Active Duty and Family Members Located in Naples, Italy*” was completed in September 2009 and is one of several studies conducted by the Navy and Marine Corps Public Health Center as part of the Naples Public Health Evaluation. An epidemiological study looks at the distribution of disease, or other health-related conditions and events in human populations, as related to age, sex, occupation, environment, ethnicity and economic status to identify and alleviate health problems and promote better health. One of the most important distinguishing characteristics of epidemiology is that it deals with groups of people rather than with individual patients.

A cancer study is included as part of the Naples Public Health Evaluation because of conclusions in Italian research that an excess risk of cancer mortality in the Campania region might be associated with a history of illegal dumping and disposal of hazardous wastes. In response to the research and disposal practices in the

area, the cancer epidemiological study was designed to investigate whether exposure to contaminants due to inadequate trash collection, the burning of trash, and improper waste disposal would increase the incidence rate of cancer in U.S. Navy personnel and dependents living in Naples.

How did the Navy conduct the study?

Epidemiologists reviewed medical and housing records for the study population, which included Navy and Marine Corps active duty personnel and dependents, to screen for individuals that had lived in Naples and that were diagnosed with either non-melanoma skin cancer, malignant melanoma, or acute myelogenous

leukemia (AML). Personnel and dependents must have lived in Naples between January 1, 1997, (when housing records were first available) and May 15, 2009 (the end of the study period). The use of housing records confirms when someone first arrived in Naples and their length of stay.

The cancer study focused on non-melanoma skin cancer, malignant melanoma and AML because they are the

What is cancer?

Cancer is not a single disease, but a group of more than 200 different diseases. It can generally be described as an uncontrolled growth and spread of abnormal cells in the body. Normally, cells divide to produce more cells only when the body needs more cells. However, sometimes cells keep dividing and create more cells even when they are not needed. This forms a mass of extra tissue called a tumor. Malignant (injurious) tumors are cancerous, while benign (non-injurious) tumors are not.

Cancer cells can invade and damage tissues and organs and can break away from a malignant tumor and enter the lymphatic system or the bloodstream. This is how cancer spreads to other parts of the body. The characteristic feature of cancer is the cell's ability to grow rapidly, uncontrollably and independently from the tissue where it started. The spread of cancer to other sites or organs in the body through the blood stream or lymphatic system is called metastasis.

Because the cause of cancer is unknown much of the time, the start of the cancer process is also unknown. Some cancers are related to exposures that occurred many years before they were detected. An example of this is lung cancer from asbestos exposure, where it can take more than 30 years from first exposure to asbestos for the cancer to develop. The time from first exposure to detection is called latency. To conclude that a specific cancer is related to a specific exposure or agent, the time from first exposure to diagnosis must be sufficient for the cancer to develop.

What causes cancer?

The causes of cancer are very complex, involving cells in the body and factors in the environment. Much is still unknown about the true nature of what causes cancer and what factors will trigger cells to become cancerous. Regardless, much progress has been made in linking cancers to possible causes and susceptibility, including exposure to certain chemicals, tobacco and radiation, and heredity factors.

only cancers that met two study criteria: (1) the cancer was associated with chemicals detected in the Navy's

environmental samples; and (2) the cancer had a short enough latency period (see below) that exposure and diagnosis can occur during the study period.

A copy of the study is available on the Naples Community Health Awareness website.

list of resulting cancer types, epidemiologists considered the cancer's latency period.

What is "latency" and why does it matter?

Latency is the time elapsed from the start of the cancer process to the time that the cancer can be clinically detected. The latency period is important in cancer studies, because it indicates when cases associated with exposure to contaminants would be expected to appear in the population. For this cancer study, it is assumed that the disease process would have begun at the time of arrival in Naples.



Most cancers take 20 to 50 years to develop, which is called the latency period. A few cancers have shorter latency periods – one to five years. For a cancer to be included in the study, it must have been capable of developing within the study period (1997-2009) so that a change in cancer rate would have the potential to be observed. Of the possible cancer types associated with the chemicals detected in the Navy's environmental samples, non-melanoma skin cancer, malignant melanoma and AML met the study's latency period criterion.

In relation to the study, non-melanoma skin cancer and malignant melanoma are associated with exposure to arsenic in tap water that is above concentration limits considered safe for human consumption. The latency period for these two cancers is five years. AML is associated with exposure to benzene in the air that is above concentration limits considered safe for human health. The latency period for AML can be from one to five years.

What did the study find out?

The number of cases of melanoma and AML for the cancer study was less than five cases for either cancer, thus an incidence rate could not be calculated with any statistical validity. Five cases is the accepted minimum number of cases to reliably calculate incidence rates.

The incidence rate of non-melanoma skin cancer found in the study population was 14.4 cases per 100,000 person-years. This incidence rate is lower than the incidence for skin cancer in the U.S. population, but not statistically different. Most cancer rates are expressed as the number of cases per 100,000 person-years so that comparisons can be made between populations of different sizes. One person-year is equivalent to one person participating in the study for one year.

What conclusions can be drawn from the study?

The risk of developing cancer from environmental exposure is based on the intensity and duration of exposure to chemicals that are associated with cancer. Although some chemical concentrations detected in Phase I sampling exceeded health-protective limits, it is unlikely that U.S. personnel and their families stationed in Naples accumulate sufficient exposure time to these chemicals for the risk of cancer to increase.

Is the Navy taking any further action?

Yes. When the Naples Public Health Evaluation is completed, the Navy will review the final list of chemicals to determine if a follow-up cancer study will be required. Refer to the cancer epidemiological study report for the list of Phase I chemicals used in the study.

The Navy also will continue to proactively implement mitigation measures to minimize potential exposure to contaminants and safeguard the long-term health and safety of personnel and their families residing in the Naples area. Many mitigation measures that have been implemented to safeguard health include the use of bottled water for drinking, cooking, brushing teeth and making ice, and the relocation of personnel as a result of potential vapor intrusion.

Where can I get more information?

Information on cancer screening, counseling and other preventive services can be found on the U.S. Preventive Services Task Force website, <http://www.ahrq.gov/CLINIC/uspstfix.htm#Recommendations/>.

A copy of the cancer epidemiological study is available on the Naples Community Health Awareness website, listed at the bottom of this page.

Staff at the Environmental Health Information Center are available to address health-related questions (see panel at right for contact information).



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