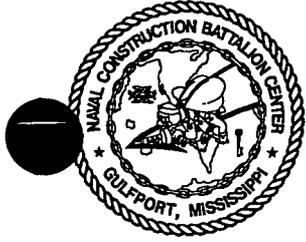


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FACT SHEET 24 HUMAN HEALTH RISK ASSESSMENT FOR DIOXINS NCBC GULFPORT
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NAVAL CONSTRUCTION BATTALION CENTER

Gulfport, Mississippi
Installation Restoration Program



This fact sheet is one in a series informing interested citizens of the environmental investigations and remedial actions at Naval Construction Battalion Center (NCBC) Gulfport. Fact sheets will be produced at program milestones and in response to other items of public interest. Distribution is coordinated through the Public Affairs Office at NCBC Gulfport, (228) 871-2393.

FACT SHEET 24: The Human Health Risk Assessment for Dioxins

Background

Herbicide Orange, a defoliant used during the Vietnam War, was stored in drums on the Seabee Center from 1968 through 1977. While stored, some of the herbicide spilled onto the ground. Studies completed between 1979 and 1999 showed dioxins (byproducts of the production of Herbicide Orange) in the soil at the storage site and in the ditches that led from the site. Later studies of the Former Herbicide Storage Site (referred to as Site 8) and the drainage ditches refined our knowledge of the contamination.

The most recent step in the study was the completion of a risk assessment. This fact sheet reports the results of the human health risk assessment. This assessment was completed to determine if the presence of contaminants related to the storage of Herbicide Orange on the Seabee Center poses any risk to human health.

Summary of Preliminary Human Health Risk Assessment Results

The Human Health Risk Assessment determined that the presence of Herbicide Orange-related dioxins outside of the base is not causing a health problem. There are some isolated locations on-base where dioxins in the surface soil and sediment could be of concern if the contaminated areas were opened for unrestricted access. However, these areas are currently restricted and should remain so in the future.

What Information Was Collected for the Human Health Risk Assessment?

Community Survey (1996)

A door-to-door community survey was completed in 1996. This survey consisted of interviews with over 800 community members to develop an understanding of how residents might come into contact with dioxin.



Environmental Data Collection (1997 and 1998)

This step included collecting sediment, soil, and water samples. The samples were sent to a laboratory to determine if dioxin was present and in what amounts.

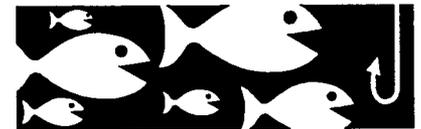


Creel Study (1999)

The community survey was refined by evaluating fishing activity in the area.

Fish Sampling (1999)

Fish were collected, filleted, and analyzed for the presence of dioxins.



Definitions:

Background Cancer Risk: The predicted risk of getting cancer in the United States.

Contaminants of Concern: Contaminants found in high enough concentrations to be considered in the human health risk calculations.

Dioxin: A byproduct of the production of Herbicide Orange. Dioxin is also produced in incineration in the bleaching of paper.

EPA: The United States Environmental Protection Agency.

Exposure: The contact between a contaminant and a receptor.

Herbicide Orange: A herbicide used as a defoliant during the Vietnam War.

MSDEQ: The Mississippi Department of Environmental Quality.

Receptors: Persons who could potentially be exposed to an identified contaminant.

Part Per Trillion (ppt): A measure of concentration that represents one part of dioxin in one trillion (1,000,000,000) parts of water. For comparison, one inch in 16 million miles is ppt.

Sediment: Soil that is carried with surface water and ultimately deposited along a streambed.

Site 8: The former storage area for Herbicide Orange at the Seabee Center.

Surface Water: Water on top of the ground such as lakes and streams.

What Are the Steps in a Human Health Risk Assessment?

<p>Step 1 Contaminant Identification <i>What's out there?</i></p>	<p>We determined if the dioxin concentrations found in and near the Seabee Center were present in high enough concentration to be used in the risk assessment. We made this determination by comparing measured values to regulatory guidelines. We found:</p> <ul style="list-style-type: none"> ● Dioxin concentrations in soil and sediment samples were high enough to be used in the risk assessment. ● Dioxin concentrations in the fish fillets and surface water were lower than the guidelines and therefore were not considered further in the risk assessment.
<p>Step 2 Exposure Assessment <i>Who could come in contact with the contaminant?</i></p>	<p>The exposure assessment used the information from the community survey and the Creel study to predict who might come into contact with the dioxins identified in Step 1. This contact is called "exposure" and the person or population who is exposed is called a "receptor." The potential receptors evaluated in the risk assessment are described below.</p>
<p>Step 3 Toxicity Assessment <i>What does the contaminant do?</i></p>	<p>We assessed how much exposure to the contaminants would cause a potential health effect. The United States Environmental Protection Agency (EPA) tells us the values that must be used in this assessment. These values are based on years of scientific research. Cancer is the only health risk associated with dioxin that is currently evaluated by the EPA. Therefore only cancer risks are calculated in this risk assessment.</p>
<p>Step 4 Risk Calculation <i>What are the risks?</i></p>	<p>We calculated potential health risks for each of the receptors identified in Step 2. Risks are described in terms of the predicted increase in cancer risk that could result from the potential exposure.</p>

The Results

Receptor	On-Base Results		Off-Base Results	
	Results	What Does That Mean?	Results	What Does That Mean?
 <p>Resident ...lives on or near the site.</p>	<p>Some contaminated sediment and surface soil on Site 8 and parts of the Equipment Operator training area could be a potential health risk if unrestricted access were allowed.</p>	<p>Residents who live either on the Herbicide Orange storage area for:</p> <ul style="list-style-type: none"> ● 16 hours a day, ● 350 days a year <p>or live on the Equipment Operator training area/ truck driver training area for:</p> <ul style="list-style-type: none"> ● 16 hours a day ● 350 days a year <p>and come into contact with dioxin-contaminated soil or sediment every day could be impacted.</p> <p>Residents who do not live in these areas are safe.</p>	<p>Calculated risks were shown to be within levels considered to be safe.</p>	<p>Residents off base are safe from the effects of dioxin.</p>
 <p>Occupational worker ...works full time at the site.</p>	<p>Contaminated surface soil and sediment on base could be a potential health risk if unrestricted access were allowed.</p>	<p>Workers on base who work at Site 8 or on the Equipment Operator training area/ truck driver training area for:</p> <ul style="list-style-type: none"> ● 8 hours a day, ● 250 days a year ● for 25 years <p>and come into contact with dioxin-contaminated soil or sediment every day could be impacted.</p>	<p>Calculated risks were shown to be within levels considered to be safe.</p>	<p>Workers off base are safe from the effects of dioxin.</p>

The Results (cont.)

Receptor	On-Base Results		Off-Base Results	
	Results	What Does That Mean?	Results	What Does That Mean?
 <p>Site worker ...mows or otherwise maintains the site.</p>	<p>Calculated risks were shown to be within levels considered to be safe.</p>	<p>Workers on base who work at Site 8 or on the Equipment Operator training area/truck driver training area for:</p> <ul style="list-style-type: none"> ● 8 hours a day, ● 25 days a year ● for 25 years <p>and come into contact with dioxin-contaminated soil or sediment every day could be impacted.</p>	<p>Calculated risks were shown to be within levels considered to be safe.</p>	<p>Workers off base are safe from the effects of dioxin.</p>
 <p>Excavation worker ...digs into the soil on the site.</p>	<p>Calculated risks were shown to be within levels considered to be safe.</p>	<p>Workers who dig in the soil off the base are safe from the effects of dioxin.</p>	<p>Calculated risks were shown to be within levels considered to be safe.</p>	<p>Workers who dig in the soil on the base are safe from the effects of dioxin.</p>
 <p>Trespasser ...occasionally walks through unfenced areas of the site.</p>	<p>Sediments on base could be a potential health risk if unrestricted access were allowed.</p>	<p>An adult trespasser who comes into contact with dioxin-contaminated soil or sediment every day for:</p> <ul style="list-style-type: none"> ● one hour a day, ● 19 days a year ● for 30 years. <p>or an adolescent trespasser who comes into contact with dioxin-contaminated soil or sediment every day for:</p> <ul style="list-style-type: none"> ● one hour a day, ● 11 days a year, ● over 24 years <p>could be impacted.</p>	<p>Calculated risks were shown to be within levels considered to be safe.</p>	<p>Trespassers who come into contact with dioxin outside of the base are safe from the effects of dioxin.</p>
 <p>Fisher ...catches fish and eats fillets from on or near the site.</p>	<p>No contaminants of concern found.</p>	<p>The fish samples did not show enough dioxin to be a health concern.</p>	<p>No contaminants of concern found.</p>	<p>The fish samples did not show enough dioxin to be a health concern.</p>

In a Nutshell...

The preliminary results of the human health risk assessment show that if someone lived on the dioxin storage area (Site 8), on some parts of the Equipment Operator training area, or in the ditch system for up to 30 years (and no one does) their health could be affected.

While the calculations show a possible health risk for residents, trespassers, and some workers on base, it is very unlikely this will occur.

What's Next?

The next step in the process is a Feasibility Study. The FS will evaluate options that are available for cleaning up or managing the contaminants on the site.

Where Do I Go for More Information?

Questions concerning the ongoing dioxin investigations or other environmental activities at the NCBC, should be directed to the Seabee Center's Public Affairs Office, (228) 871-2393.

Final reports on the dioxin investigation at NCBC are available at the Seabee Center's local information repository at the following location:

*Gulfport-Harrison County Library
Reference Section
21st Avenue
Gulfport, MS 39501
Telephone: (228) 863-2393*