N62604.AR.000503
NCBC GULFPORT
5090.3a

FACT SHEET 25 REGARDING SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT

NCBC GULFPORT MS

8/1/2000

NCBC GULFPORT

NCBC Gulfport Administrative Record
Document Index Number

39501 - GENERAL
13.06.00.0035

NAVAL CONSTRUCTION BATTALION CENTER

Gulfport, Mississippi

Installation Restoration Program

25

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 25: The Screening Level Ecological Risk Assessment

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 screening level ecological risk assessment. This assessment was completed to predict if the presence of contaminants related to the storage of Herbicide Orange on the Seabee Center could harm plants or animals in the area.

What a Screening Level Risk Assessment?

An ecological risk assessment is done to evaluate any possible damage to the environment caused by contamination.

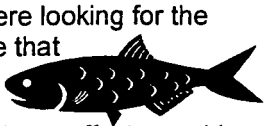
A screening level risk assessment is a special ecological risk assessment method that is looks only at the animals most likely to be damaged by dioxin. We call these animals "dioxin-sensitive." These animals:

- may or may not be present in the contaminated areas, and
- the animals that are present could come into contact with different amounts of dioxin than is assumed in the study.

If the sensitive animals show potential harm, then we can conclude the possibility of harm to animals may exist. If no risk is identified in the assessment, then we can assume that no harm to the environment is likely.

What Did We Find?

In the ecological risk assessment we were looking for the greatest amount of ecological damage that could possibly be caused by the presence of dioxin. It is unlikely that all of the conditions needed to cause these effects would occur.



However, The risk assessment process is designed to be as protective as possible. therefore We were looking for any possible impacts to the environment.

In this screening level ecological risk assessment we found that fish exposed to the dioxin in the sediment (soil in the ditches) and animals that eat fish may be affected by the presence of dioxin. Specifically, animals that are sensitive to dioxin (the Great Blue Heron, the Eastern Belted Kingfisher, and mink) may have problems reproducing and fish in the ditches that are sensitive to the effects of dioxin may have difficulties reproducing.

What Do the Findings Mean?

Environmental impact from the presence of dioxin is possible, but not confirmed. For conclusive results, the study must be expanded to determine if the animals that are sensitive to dioxin are actually present and to calculate the risks specifically for these animals.

Definitions

Dioxin: A byproduct of the production of herbicide orange. Dioxin is also produced in incineration and in the bleaching of paper.

Exposure: What happens when a receptor is in contact with a contaminant.

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

Receptors: Plants or animals that could potentially be exposed to an identified contaminant.

Sediment: Soil that is carried with surface water and ultimately deposited along a streambed. Soil in the ditches is called sediment.

Sensitive (plants or animals): Those plants or animals that are most likely to be affected by the presence of the contaminant being evaluated.

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

Surface Water: Water on top of the ground such as the water in ditches, streams, and lakes.

What Were the Steps in the Screening Level Ecological Risk Assessment?

Step 1 **Problem Formulation**	**What should we look at?** • Animals and plants were selected for the study. • The ways in which plants and animals could come into contact with dioxin were identified. • The amount of dioxin in surface water (water on top of the ground such as ditches and streams), sediment, and food that could be considered safe for each animal and plant selected was established.
Step 2 **Contaminant Identification**	**What is out there?** • In 1998 and 1999 we collected samples of sediment, soil, and water to determine if dioxin was present and in what amounts. • We found small amounts of dioxin attached to sediment flowing from Site 8 and in the canal flowing north away from the base. • In 1999 we collected whole fish and analyzed for the presence of dioxin. Any abnormities in the fish samples were noted.

Step 3
Exposure Assessment
	How could the animals or plants come into contact with the dioxin contamination?
	• Coming into contact with dioxin is called an exposure.
	• The animals or plants that come into contact with a contaminant are called receptors.
	• We looked at plants and animals that live in the water, such as fish, insects, and amphibians both inside the base and in the ditches leading from the base.
	• We looked at animals that eat the fish in the ditches outside of the base.
	• We looked at the animals most likely to be affected by (or the most "sensitiv to) dioxin.
	  o This approach makes the assumption that if the most sensitive animals are safe, then the less sensitive animals will also be safe.
	  o Possible impacts on the mink, eastern belted kingfisher, and great blue heron were evaluated.
	  o These animals were not all seen by the biologists who studied the area.

Step 4 **Ecological Effects Assessment**	**Do we suspect any impact to the environment?** • Fish that are especially sensitive to dioxin could have problems reproducing. • Fish-eating mammals and birds that are especially sensitive to dioxin could have problems reproducing if they eat fish that have accumulated dioxin in their bodies.

What's Next?

The next step in the overall process is a Feasibility Study. The Feasibility Study may include obtaining additional information about the nature and extent of potential ecological impacts related to the presence of dioxin in the environment. The Feasibility Study 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) 863-6411