DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON, D.C. 20350-2000

IN REPLY REFER TO

5090
Ser N45C/N4U732212
30 January 2004

From: Chief of Naval Operations
To: Commander, Naval Facilities Engineering Command

Subj: NAVY POLICY ON THE USE OF BACKGROUND CHEMICAL LEVELS

Encl: (1) Navy Policy on the Use of Background Chemical Levels

1. Enclosure (1) is provided in response to field concerns to clarify Navy policy on the consideration of background chemicals as it applies in the Environmental Restoration Program. This policy further clarifies the Navy's interpretation of the Environmental Protection Agency's Role of Background in the CERCLA Cleanup Program, April 2002. The policy describes how to consider background chemical levels by 1) identifying those chemicals that are in the environment due to releases from the site; 2) eliminating from consideration in the risk assessment process both naturally occurring and anthropogenic chemicals that are present at levels below background; 3) ensuring documentation and discussion of potential risk of chemicals that have been eliminated during the background evaluation process; and 4) developing remediation action levels that are not below background.

2. Questions can be addressed to Dave Olson at (703) 602-2571; DSN 332-3571 or by email: David.L.Olson@navy.mil.

David L. Olson

DAVID L. OLSON
Special Assistant for ER&IR

Copy to:
LANTNAVFACENGCOM (Code 18)
PACNAVFACENGCOM (Code 18)
SOUTHNAVFACENGCOM (Code 18)
SOUTHWESTNAVFACENG (Code 18)
ENGFLDACT CHESPEAKE (Code 18)
ENGFLDACT NORTHWEST (Code 18)
ENGFLDACT NORTHEAST (Code 18)
NFESC

NAVY POLICY
ON USE OF
BACKGROUND CHEMICAL LEVELS

PURPOSE

The purpose of this policy is to address background chemical levels from naturally occurring and anthropogenic sources and their use in the Environmental Restoration Program. This policy was developed in response to issues concerning identification of sites for no further action, the elimination of background chemicals from the Contaminant of Concern (COC), and the identification of action levels at sites where it has been determined there is a need for remediation.

This policy further clarifies the Navy's interpretation of the Environmental Protection Agency's Role of Background in the CERCLA Cleanup Program, April 2002.

APPLICABILITY

Policies and procedures contained herein apply to site cleanups funded under Environmental Restoration, Navy (ER,N) and Base Realignment and Closure (BRAC).

DEFINITIONS:

- **Naturally occurring chemical levels (non-anthropogenic) -** Ambient concentrations of chemicals present in the environment that have not been influenced by human activities (e.g., arsenic). (Risk Assessment Guidance for Superfund Part A (RAGS Part A), EPA 1989)

- **Anthropogenic chemical levels (non-naturally occurring) -** Concentrations of chemicals that are present in the environment due to human-made, non-site sources (e.g., application of pesticides, herbicides, lead from automobile exhaust). (RAGS Part A EPA, 1989)

- **Chemicals (constituents) of Potential Concern (COPC) -** Generally comprise the hazardous substances, pollutants, and contaminants that are investigated during the baseline risk assessment. (Role of Background in the

CERCLA Cleanup Program, EPA 2002). Site related COPCs are those chemicals that exceed both risk based screening criteria and background and are carried forward for evaluation of risks in the baseline risk assessment. Non-site related COPCs are those chemicals that exceed risk based screening criteria, but are consistent with background, and should be discussed in the risk characterization of the baseline risk assessment.

- **Chemicals (constituents) of Concern (COC)** - Site-related hazardous substances, pollutants and contaminants that, at the end of the risk assessment, are found to be the risk drivers or may pose unacceptable human or ecological risks.

POLICY

This policy requires:

1) A clear and concise understanding of chemicals released from a site thus ensuring that Navy is focusing on remediating the release.
2) Use of Background Data in Screening Risk Assessment
   a. Compare site chemical levels to risk based screening criteria.
   b. Compare site chemical levels to background.
   c. Take site related COPCs and carry through to the baseline risk assessment. [Non-site related COPCs shall be discussed in the risk characterization section of the baseline risk assessment.]
3) Use of Background in Baseline Risk Assessment
   a. Calculate risks for site related COPCs.
   b. Non-site related COPCs should be compared to risk based screening benchmarks and discussed in the risk characterization section. The Navy considers this comparison to be consistent with EPA's Role of Background in the CERCLA Cleanup Program(EPA, 2002).
4) Site cleanup remedial goals are not below background levels. Additionally, cleanup levels should not be developed for chemicals that are not identified as COCs.

Background chemical levels should be evaluated during site investigations in order to differentiate between the Navy's

cleanup responsibilities and background sources. The COPC process (which includes elimination of chemicals on the basis of background evaluation) should be discussed as early as possible with regulators and communicated to the community. The evaluation of background chemicals shall be scientifically based, defensible, and cost effective.

Background Chemicals

Background chemical evaluation is one of the tools used during the COPC process. RAGS Part A, EPA 1989 states "Background sampling is conducted to distinguish site-related contamination from naturally occurring or other non-site related levels of chemicals." Background chemical levels do not signify a release of a hazardous substance according to the definition of a release as stated in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Background chemicals are either naturally occurring in soil, surface water and sediments or are anthropogenic (placed there by human activities). Background distributions can range from localized to ubiquitous (widespread) (e.g. pesticides, Polycyclic Aromatic Hydrocarbons) in certain areas. Often times naturally occurring, ubiquitous chemicals may be present in the environment due to natural sources (e.g. forest fires)(RAGS Part A, EPA 1989). Understanding the nature of the potential release of the site is the first step in determining the risk posed by the site.

Naturally Occurring Chemical Levels (NOCL)

Naturally occurring background chemicals and their levels are substances that occur regardless of the presence or absence of human activity. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 104(3)(A) states "Limitation on Response. The President shall not provide for a removal or remedial action under this section in response to a release or threat of release of a naturally occurring substance in its unaltered form..."

Anthropogenic Chemical Levels (ACL)

Anthropogenic background chemicals and their levels are substances that are in the environment as a result of human activities. Standard application (i.e., applied

according to directions) of chemicals (e.g. pesticides and herbicides) are to be considered anthropogenic levels when it can be demonstrated that on-site and background levels are similar.

Base-wide Background Chemical Levels

To fully understand the nature of the site it is necessary to distinguish between releases caused by Navy operations and those chemicals caused by non-site related sources (background). Base-wide background chemical levels should be established and considered as early as the Preliminary Assessment/Site Inspection phase of the CERCLA process and/or the Resource Conservation and Recovery Act (RCRA) Facility Investigation of the RCRA process. Establishing scientifically defensible background chemical levels early in the process provides rationale to support no further action decision for sites with 'no site releases'.

Risk Assessment

Background chemicals should be considered during the screening portion of the Human Health Risk Assessment (HHRA) and during Step 3a of the Tier 2 Baseline Ecological Risk Assessment (BERA) (CNO Policy April 1999). It is important to establish site contaminants early in the cleanup process. The evaluation of background chemicals during the screening HHRA and Step 3a of the BERA will assist in the identification of those contaminants that are the result of a past release. Once the background levels have been established, those levels should be compared to the chemicals located at the site. **If any chemicals are within the range of background, they will not be carried through the baseline risk assessment.** Instead these chemicals will be compared to risk-based benchmarks in the risk characterization section. This comparison equates to a quantitative risk assessment. The Navy considers this comparison to be consistent with EPA Role of Background in the CERCLA Cleanup Program. [Hypothetical Case 3, 2nd paragraph] (EPA April 2002). In some cases, there may be risk from chemical levels below background levels. This risk is outside of the scope of the Navy's Environmental Restoration Program but it should be communicated to our stakeholders in the risk characterization section.

Example: The chemical concentration at the site for arsenic exceeds the site-specific risk-based concentrations. The established background level for arsenic is consistent with the chemical concentration. Arsenic is not considered further in the quantification of risks, but is included in a qualitative discussion of risks in the risk characterization.

The following actions should be taken according to the condition stated below for both the Ecological and Human Health Risk Assessments:

Ecological Risk Assessment

Condition	Action
Chemical<Background<benchmark	drop @ Tier 2, Step 3a
Background<chemical<benchmark	drop @ Tier 2, Step 3a
Benchmark<chemical<background	document in Risk Characterization

Human Health Risk Assessment

Condition	Action
Chemical<Background<benchmark	drop @ Tier 1, Screening
Background<chemical<benchmark	drop @ Tier 1, Screening
Benchmark<chemical<background	document in Risk Characterization

Cleanup Action Levels

The action level for the remediation of sites should be risk-based, should not be below background levels, and should target the risk associated with the COC or contaminant concentration exceeding background chemical levels (i.e. incremental risk). Cleanup levels shall only be developed for chemicals that are identified as COCs.

Conclusion

In summary 1) identify those chemicals that are in the environment due to releases from the site; 2) compare background levels to site chemicals and the appropriate risk-based benchmark 3) eliminate from consideration in the baseline risk assessment process both naturally occurring and anthropogenic chemicals that are present at levels below background and document those chemicals in the baseline risk assessment report; and 4) develop COC action levels for remediation that are not below background.