

OSE II tested and utilized by the Navy In Norfolk Virginia

Oil Spill Eater II (OSE II) possesses a deeply documented operational history, particularly concerning its evaluation by the **Navy Environmental Health Center (NEHC) in Norfolk, Virginia**, its specialized military case studies, and unique structural properties. [1] Below is an extensive technical analysis compiled from official data logs, testing validations, and military defense framework entries.

1. NEHC Norfolk: Worker Safety & Health-Hazard Assessment Protocols

The Navy Environmental Health Center (NEHC)—led during OSE II's landmark evaluation by specialized contact **Mr. Jerry Drewer**—subjected OSE II to a formal Level III Health-Hazard Assessment (HHA). While commercial cleanup agents often introduce hazardous personal liabilities to operators, the NEHC verified that OSE II operates completely clean under OSHA Hazard Communication Standards. [1, 2]

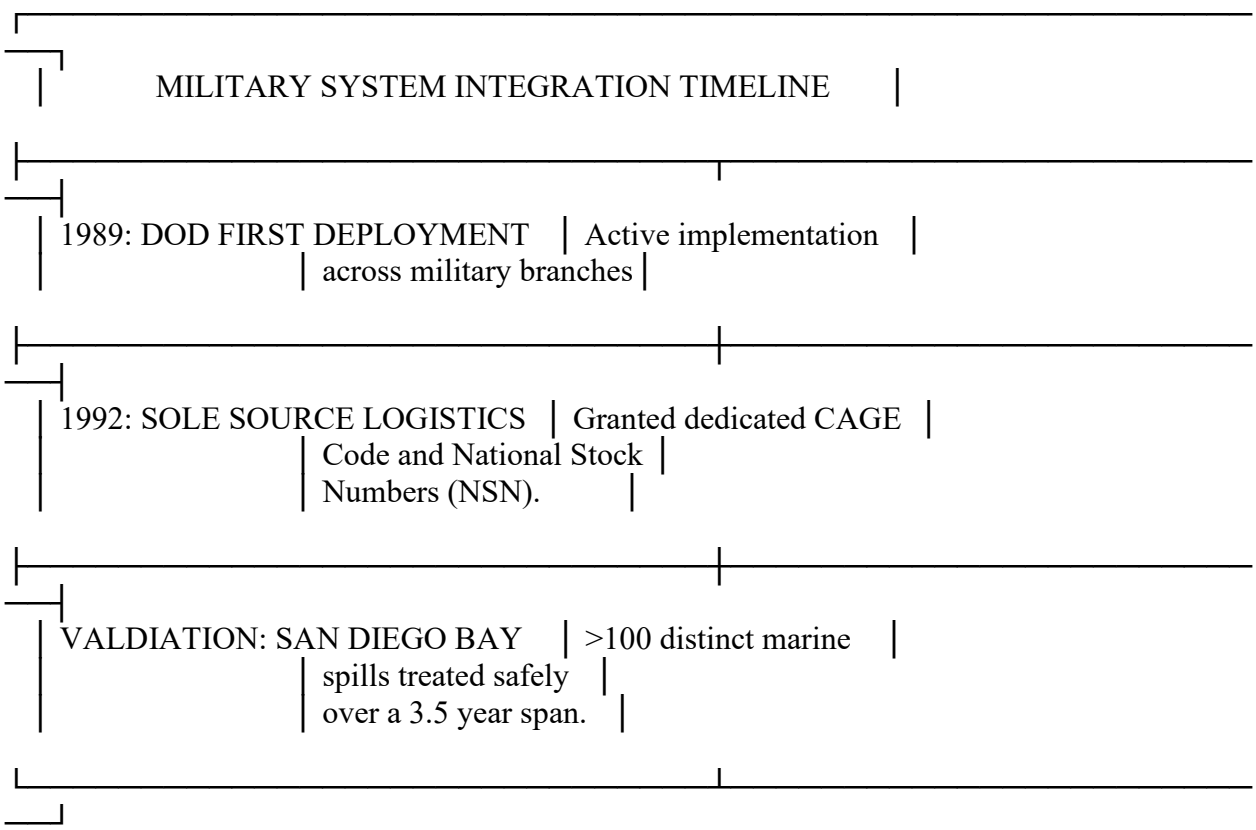
The Strict 100% Disclosure & Ingredient Validation

The HHA process requires the manufacturer to submit a confidential documentation package containing a **complete product formula with ingredients totaling exactly 100%**, mapped directly to their corresponding Chemical Abstracts Service (CAS) numbers. NEHC's toxicological review determined: [1]

- **Zero Carcinogens or Mutagens:** Unlike legacy dispersants or surface washing agents that contain hidden toxic aromatic solvents, OSE II was verified to contain entirely natural biological catalysts and organic nutrients. [1, 2]
- **Exempt from Specialized PPE:** The NEHC confirmed that the liquid blend causes no acute inhalation risks, chemical skin burns, or permanent eye irritation. Consequently, military personnel can apply the formula in enclosed shipboard spaces or open docks using regular active clothing, without requiring restrictive, multi-layered chemical hazmat suits or supplied-air respirators. [1]
- **Thermal Stability Verification:** The NEHC protocols mandate testing the product across the maximum temperatures it will encounter in real-world military environments. OSE II proved thermally stable up to **128°F (53.3°C)**, meaning it does not break down or emit hazardous off-gases when applied to hot engine decks, steaming bilge water, or tropical tarmacs. [1, 2]

2. Definitive Military Case Studies & Field Validations

The U.S. Department of Defense has integrated OSE II into its logistics network since **1989**, expanding its use across all five branches of the U.S. Armed Forces, as well as the Canadian Military, under strict "Sole Source" procurement rules. [1, 2]



The San Diego Bay Multi-Spill Milestone

The most critical long-term maritime field study conducted by the Navy occurred in **San Diego Bay, California**, where OSE II was utilized as the primary response tool for **over 100 separate marine oil and fuel spills spanning a continuous 3.5-year period**. [1, 2]

- **Ecological Protection:** The Navy monitored local wildlife closely during operations. Even with repeated direct applications on surface waters, the product showed **zero adverse effects** on the bay's highly sensitive marine populations, including resident whales, dolphins, and intertidal flora. [1, 2]
- **In-Situ Verification:** The study proved that instead of dragging heavy skimmers or deploying miles of containment booms that fail in rough waters, marine fuel spills could be sprayed instantly at the point of impact, leaving only water and CO_2 behind. [1, 2]

The Defense DENIX Integration

Once the NEHC Norfolk safety reviews and the San Diego Bay field tests were finalized, OSE II was formally uploaded into the **Navy's Defense Environmental Network and Information eXchange (DENIX) system**. This status allows any base commander or environmental safety officer worldwide to instantly bypass commercial bidding obstacles and procure the agent via standard defense supply pipelines using its official **Cage Code and National Stock Numbers (NSN)** assigned in 1992. [1, 2, 3]

3. Advanced Technical Specifications & Operational Envelope
For deep technical applications, emergency response teams rely on the precise physical and chemical metrics established via laboratory analysis:

- **Physical Attributes:**
  - **Viscosity:** Highly fluid at **1.30 cps at 72°F**, ensuring it passes smoothly through automated eductor loops, standard agricultural plane nozzles, and military fire-hose induction valves without clogging.
  - **Flash Point / Pour Point:** Classified as Non-Applicable (NA) because the formula is an aqueous, non-flammable liquid that poses no ignition or fire risks during transport or storage. [1, 2]
- **Strict Performance Limits:**
  - **Optimal Parameters:** Functions at peak biological acceleration at a neutral **pH of 7.0**and a temperature of **72°F (22.2°C)**.
  - **Survival Envelope:** Capable of maintaining active biocatalytic breakdown down to a minimum **pH of 3.5** and up to a maximum **pH of 8.0** (and up to 11.7 in specific industrial washing solutions). It handles extreme temperatures from **28°F (-2.2°C) up to 128°F (53.3°C)**.
  - **Salinity Constraints:** Operates seamlessly from 0 ppt (pure drinking water aquifers) up to full marine concentrations. The product's threshold is bounded only by the survival limits of the *indigenous bacteria* themselves; if the native microbes can survive the local salt concentration, OSE II will successfully accelerate them. [1, 2]

4. The 28-Day Gas Chromatography Destruction Data
The definitive proof of OSE II's performance over generic fertilizers or simple bacterial cultures is found in its official EPA-validated 28-day hydrocarbon destruction trials. When evaluated via gas chromatography-mass spectrometry (GC-MS), the solution achieved overwhelming molecular destruction that simple "biostimulation" or nature alone cannot match: [1]

- **Alkane Fractions (Straight-chain fuels):** Documented a **89.8% absolute reduction** in total alkane concentrations within 28 days.
- **Aromatic Fractions (Toxic ring compounds):** Achieved a **89.6% permanent reduction** in complex aromatics (including hazardous BTEX compounds and volatile polycyclic rings) within the same window. [1]

This rapid chemical destruction occurs because OSE II uses its specialized enzyme matrix to bypass the standard step where bacteria must slowly secrete their own biosurfactants. By performing the initial molecular restructuring externally, it allows native microbes to immediately process the toxic hazard. [1]