Federal/State Workgroup
Deep-Water Ocean Disposal Off Southern CA Coast

May 17, 2022

John Chesnutt
US EPA Region 9
Superfund Division
In Vietnam, Facebook aids in censorship

A TOXIC SECRET LURKS IN DEEP SEA

As world grapples with ‘forever chemicals,’ a largely forgotten problem haunts Los Angeles again: DDT

Trump’s populism may last in GOP
Editorial: We need faster action on removing the DDT graveyard off the L.A. coast.

Hazardous waste survey off Palos Verdes Peninsula concludes.

California sea lions' deaths from mysterious cancer linked to Herpes and DDT, experts say.

Sea lions are dying from a mysterious cancer. The culprits? Herpes and DDT.

Deep-sea 'Roombas' will comb ocean floor for DDT waste barrels near Catalina.
Ms. Jane Nishida  
Acting Administrator  
Environmental Protection Agency  

Dear Acting Administrator Nishida:

I write regarding DDT contamination concerns that are impacting the environment and public health. From 1947 to 1983, the Montrose Chemical Corporation manufactured DDT in Montrose, Colorado, and it has been identified as a significant source of contamination.

Re: Remediation of DDT of Palos Verdes Peninsula  
Dear Acting Regional Administrator Jordan:

Thank you for all that you and the U.S. EPA Region IX team do to protect the environment and public health across the country.

Count of Los Angeles  
Board of Supervisors  
KERNES HILL HALL OF ADMINISTRATION  
345 WEST TEMPLE STREET  
LOS ANGELES, CALIFORNIA 90013  

May 7, 2021  

Michael S. Regan  
Administrator  

Dear Secretary Becerra and Administrator Regan:

Thank you for your public service. Recent research indicates an increase in cancer in sea lions along the coast. This increase may be attributable to the presence of DDT in the ocean, which affects the health of sea lions that might have been exposed to DDT in the past. The question is whether the current levels of DDT pose a significant health risk to sea lions and the broader ecosystem.

Washington, DC 20230  

Michael S. Regan  
Administrator  
Environmental Protection Agency  
Washington, DC 20460  

Dr. Deborah Jordan, Deputy Regional Administrator  
Region 9, Pacific Southwest Office, U.S. Environmental Protection Agency  
75 Hawthorne Street  
San Francisco, CA 94105  

SUBJECT: Assessment of Offshore DDT Dumping  

Dear Dr. Jordan,

The City of Rancho Palos Verdes is troubled by the revelations reported in the Los Angeles Times regarding the true extent of DDT dumping off the coast of the Palos Verdes Peninsula.
March 2021 Survey - Scripps through an MOU with NOAA conducted a survey on the R/V *Sally Ride*.

- 148 square kilometers; 36,000 acres
- Water depth: 3000’
- Greater than 25,000 barrel-like targets
- Excess of 100,000 debris objects
- Nature of targets varied through dump site
- Debris field approaches CA State Waters
- Emerging Robotics and “Big Data” Analytics enabled this study
**Initial Assessment**

There are fourteen documented deep-water ocean disposal sites off the Southern CA coast that received chemical, refinery, and other wastes from a variety of sources between the 1930’s and the early 1970’s.

Very little information is available as to the conditions of these sites, and whether their contamination poses, or could pose, risks to environmental or human health.

Source: 1973 Southern CA Coastal Water Research Project (SCCWRP) Report
## Table 4-31
### SUMMARY OF WASTES DUMPED INTO THE SOUTHERN CALIFORNIA BIGHT, 1931-71

<table>
<thead>
<tr>
<th>Type of Wastes</th>
<th>Major Dumping Sites*</th>
<th>Record Period</th>
<th>Estimated Total During Record Period (M tons)</th>
<th>Estimated Present Tonnage** (M tons/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refinery Wastes</td>
<td>3</td>
<td>1946-71</td>
<td>480,000</td>
<td>1,800</td>
</tr>
<tr>
<td>Chemical Wastes</td>
<td>2, 3</td>
<td>1965-71</td>
<td>2,800</td>
<td>470</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>1947-71</td>
<td>5,700</td>
<td>210</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>1960-67</td>
<td>140</td>
<td>-</td>
</tr>
<tr>
<td>Filter Cake</td>
<td>8</td>
<td>1969-70</td>
<td>320,000</td>
<td>-</td>
</tr>
<tr>
<td>Oil Drilling Wastes</td>
<td>2</td>
<td>1966-70</td>
<td>3,000,000</td>
<td>-</td>
</tr>
<tr>
<td>Refuse and Garbage</td>
<td>4</td>
<td>1931-71</td>
<td>47,000</td>
<td>1,200</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>1944-70</td>
<td>7,400</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>1947-68</td>
<td>90,000</td>
<td>-</td>
</tr>
<tr>
<td>Radioactive Wastes</td>
<td>10, 14</td>
<td>1946-68</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Military Explosives</td>
<td>6, 11, 12</td>
<td>1945-70</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Miscellaneous Wastes</td>
<td></td>
<td></td>
<td>-</td>
<td>250</td>
</tr>
</tbody>
</table>
Disposal Site #2
Senior leaders from Federal and State agencies meet regularly to discuss Disposal Site #2 and Next Steps

Participating agencies include:

- United States EPA
- National Oceanic and Atmospheric Administration
- United States Department of the Interior
- California Natural Resources Agency
- California EPA
- California State Water Resources Control Board
- Los Angeles Regional Water Quality Control Board
- California Department of Toxic Substances Control
Actions Being Discussed by the Participating Agencies – Focusing on Site #2

1. Document the Operational and Regulatory History of Disposal Site #2

2. Identify Areas of Significant Drum Disposal and the Nature of Contamination at Disposal Site #2

3. Evaluate Southern California Bight Environmental Conditions and Trends

4. If Conditions at Disposal Site #2 Are Determined to Threaten Human Health or the Environment – Conduct Technology Screening for Disposal Site #2
1. Operational and Regulatory History of Disposal Site #2

Objective: Identify contaminants of concern (COCs), wastes and volumes disposed, and entities that produced the waste

Actions:

a) Continue review of Montrose DDT Plant’s operational history
b) Locate and review supporting references and documents for the 1985 Los Angeles Regional Water Quality Control Board Report
c) Locate and review Los Angeles Regional Water Quality Control Board records and documents regarding administration of Waste Discharge Requirements during 1961-1970
d) Locate and review local records regarding pre-1961 operation and waste disposal
1. Operational and Regulatory History of Disposal Site #2

**Status:** a) Completed analysis of Montrose Plant operational history:

- DDT-containing waste from Montrose deposited in Pacific Ocean disposal sites as a bulk liquid from barge holding tanks.

- EPA has also concluded that Montrose did not use or arrange for drums to be used for the ocean disposal of acid waste containing DDT from the Montrose Torrance plant.

b-d) Continue to review records coming in from Federal, State, and local agencies.
2. Extent of Drum Disposal and Nature of Contamination – Disposal Site #2

Objective: Identify Areas of Significant Drum Disposal. Provide information regarding the contaminants and their concentrations present in sediment

Actions:
   a) Conduct follow-up sonar survey of Disposal Site #2
   b) Conduct targeted sediment sampling, possibly including water and biota

Status: Workgroup of Federal and State technical/scientific staff and managers have developed priorities for the additional sonar survey, a dynamic conceptual site model, and an initial strategy for an environmental sampling and analysis plan (approaches for statistical design, analytical chemistry, and sampling techniques, focusing on sediments)
Proposed Sonar Survey Priority Areas

Priority 1: High Density - Delineate areas with the greatest target density to capture additional barrel density

Priority 2: Short Dumping - Disposal history indicates that there may have been waste disposal short of the permitted Disposal Site #2
Conceptual Site Model (CSM) for Disposal Site #2

Purpose: Consolidate existing information that will support evaluations of risk to human health and marine life from historical activities at the site (for broad audience)

The model includes three interrelated components:

- Physical fate and transport pathways for wastes, including contaminants of concern, and environmental media of concern
- Potential exposure pathways and adverse effects to marine life, including food web pathways for bioaccumulative contaminants in deep-sea sediments
- Potential exposure pathways and concerns for humans
CSM - Contaminants of Potential Concern

- **Chemical Waste (2800 metric tons (MT))**
  
  Examples (including DDT metabolites):

  - 4,4'-DDT
  - 4,4'-DDE
  - 4,4'-DDD
  - 4,4'-DDMU
  - 4,4'-DDNU
  - p-Chlorobenzenesulfonic acid

- **Oil Drilling Wastes (3,000,000 MT) and Oil Refinery Wastes (480,000 MT)**
  
  Examples:

  - Naphthalene
  - Fluorene
  - Phenanthrene
  - 2-Methylnaphthacene
  - Methylphenanthrenes
  - (Polycyclic Aromatic Hydrocarbons)

- **NSOs**
  
  Nitrogen-, sulfur-, and oxygen-substituted heterocycles

- **Metals / Metalloids**

  Arsenic, cadmium, cobalt, chromium, copper, mercury, nickel, lead, vanadium, zinc
Potential human health exposure pathways – hydrophobic contaminants

Primary contaminant sources
- Drum disposal
- Bulk disposal

Primary release mechanisms
- Leaking / advection / dissolution
- Sorption / settling / advection
- Advection / dissolution

Secondary contaminant sources
- Water column
- Suspended sediment
- Bottom water
- Bottom sediment

Secondary release mechanisms
- Uptake — Water-column organisms
- Uptake — Bottom-dwelling organisms

Pathway
- BIOMAGNIFICATION into fish species of commercial / recreational / subsistence importance

Exposure route
- Human ingestion
- Human dermal contact (incomplete from deep bottom sediments due to remote location and from dissolved phases due to dilution over time and space)

Primary concern: consumption of fish that accumulate hydrophobic contaminants from sediments
Environmental Sampling and Analysis Plan
- Initial Conceptual Design Elements -

Null hypotheses that would likely be addressed with sufficient statistical power:

- Mean concentrations of COCs (e.g., DDT) in ellipse are ≤ reference conditions
- Mean concentrations of COCs (e.g., DDT) in ellipse are ≤ ecological risk-based thresholds
- Mean concentrations of COCs (e.g., DDT) in ellipse are ≤ conc. at outer perimeter of study site
- Concentrations of COCs (e.g., DDT) are independent of barrel density within the study area

Additional hypotheses with less statistical power:

- Concentrations of COCs (e.g., DDT) do not vary with distance from the central ellipse
- The association between concentrations of COCs and distance do not vary directionally

Concentrated samples in Central Ellipse (high barrel density in Disposal Site 2) and in Reference Area.
Potential Analytical Chemistry Approach

Analytes will be targeted based on (1) known/suspected toxicity to human health and marine biota and (2) potential use for contaminant source identification.

<table>
<thead>
<tr>
<th>Potential analytes for sediment analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Targeted primarily based on toxicity, but also as source indicator</strong></td>
</tr>
<tr>
<td>DDX (DDT, DDE, DDD, DDMU, DDNU; 2,4′- and 4,4′-isomers)</td>
</tr>
<tr>
<td>PAH (includes alkyl-substituted PAH and NSOs)</td>
</tr>
<tr>
<td>TCPM and TCPMOH [tris(4-chlorophenyl)methane and tris(4-chlorophenyl)methanol] (all isomers that are commercially available)</td>
</tr>
<tr>
<td>Metals / metalloids</td>
</tr>
</tbody>
</table>

Hybrid nontargeted-targeted analysis of organic contaminants

- Use US EPA methods when appropriate (e.g., metals by ICP-AES or ICP-MS; PCB congeners by GC/MS-SIM)
- Would need academic collaborators for GC x GC-TOF analysis
- Integrate rigorous QA/QC into all analyses to maximize data reliability
San Pedro Basin: Potential Reference Site Criteria

- Proximity to DS2
- Up-current of DS2
- Similar depth, bathymetry, sediment, diss. oxygen levels as DS2

- Not influenced by:
  - Other permitted disposal sites
  - Other known contaminant sources (e.g. seeps, outfalls, ag. runoff)
Outreach/Collaboration:

- EPA website – coming soon

- Conversations with scientific community. Coordinating with Scripps and UCSB regarding congressional appropriation

- Continued updates to congressional offices, local officials, NGOs, and others