

Montrose Chemical Corporation (UD#2 IX-6)
Torrance, California
30 June 1985

Location and Nature of Site

The 17-acre Montrose Chemical Corporation site is located in a mixed light industrial and residential area of Torrance in Los Angeles County. This site, in operation from 1948 to 1982, was a major facility for the production of the pesticide DDT. Although DDT was banned for use in the U.S. in 1972, Montrose continued its production for export markets until 1982. No DDT has been used in California since 1976.

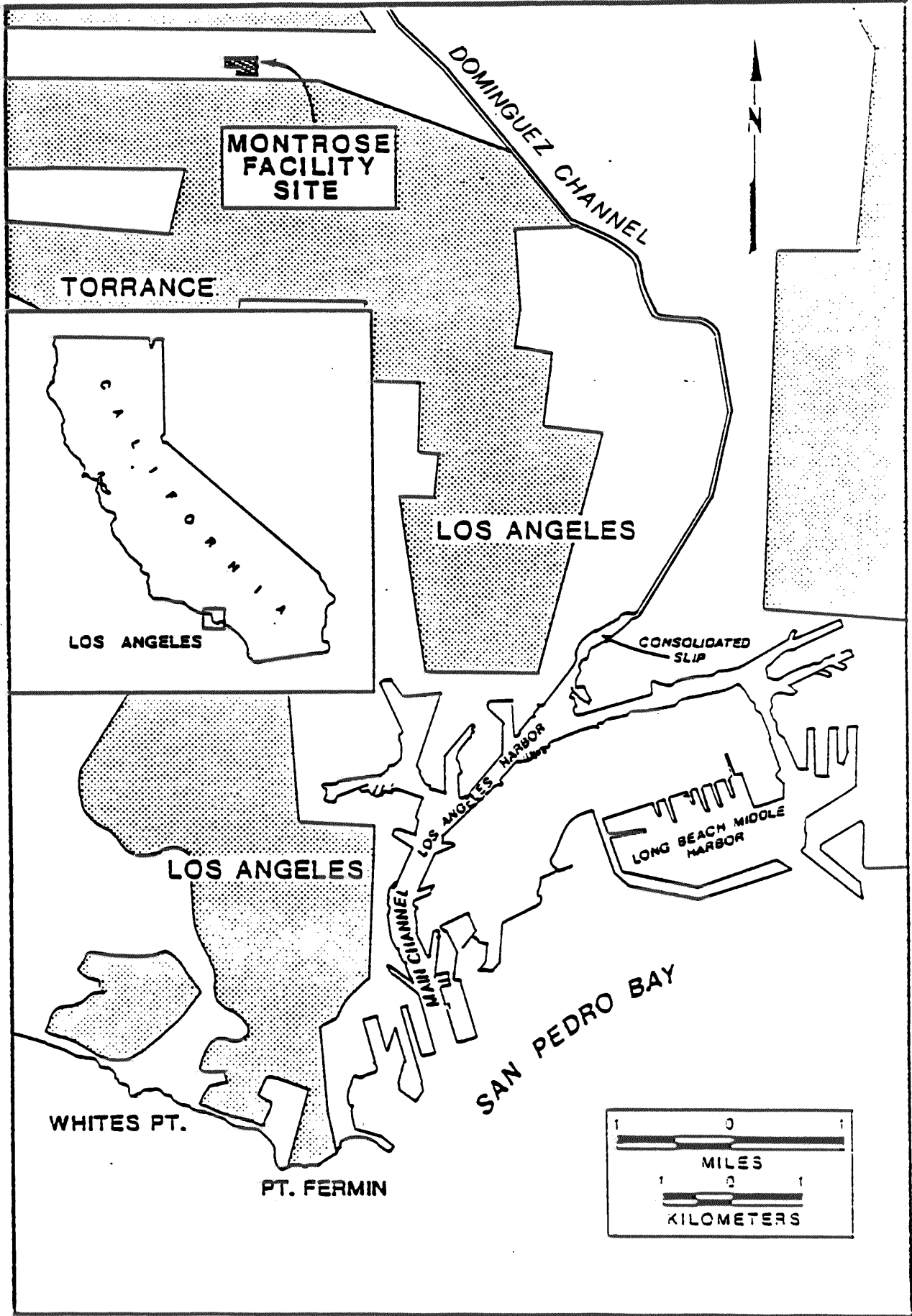
Operations at the site included formulation, grinding, packaging, and distribution of DDT. Montrose razed the facility in 1982 after manufacturing operations ceased. In January 1985, the company began installing an asphalt cap over the site to control offsite migration of DDT contamination.

Chemical Hazards

Proximity to Marine Waters

Storm water from the site flows along a ditch to a catch basin, and then through an underground storm drain for approximately one kilometer to the Torrance Flood Control Channel. The Torrance Channel connects with Dominguez Channel, which empties into Los Angeles Harbor at Consolidated Slip, a total stream distance of approximately 15 kilometers from the site.

Prior to 1970, Montrose discharged waste liquid from the manufacturing process through Joint Outfall 'D', of Sanitation District 5, Joint Water Pollution Control Plant (JWPCP), Los Angeles County. After treatment at a primary sewerage processing facility the wastes were discharged from this system into the ocean at Whites Point in San Pedro Bay. Wastes were disposed of in nearby landfills after discharge into the sewers was halted.



species of marine flora and fauna are also at greater risk than are top- and mid-water species.

Benthic invertebrates, including mollusks, annelids, coelenterates, and crustaceans, are in direct and constant exposure to contaminated sediments. These organisms probably represent the current point of DDT entry into the food chain. Several resident fish species that exhibit demersal feeding habits have been sampled in the vicinity since the 1970's. The fish sampled included white croaker, black perch, white perch, halibut, queenfish, and assorted species of rockfish. Of these fish, the commercially important white croaker was the species most consistently sampled for DDT derivatives.

Resident populations of coastal bottlenose dolphin and several species of seals are also prevalent in the vicinity of the Montrose site.

Resident bird populations in the coastal area of the site were reduced by the documented DDT discharges from the site. Of particular concern was the decline in resident pelican and cormorant populations. All resident bird populations in the area have been documented as increasing in numbers since the closing of the Montrose plant.

Crustaceans are known to be extremely sensitive to DDT. The shrimp, *P. duorarum*, experiences total mortality at water concentrations of 0.12 ppb of DDT after 28 days of exposure. Several species of Pandalid shrimp which are found in the Pacific Ocean are potentially endangered by the contaminated sediments and periodic surface runoff waters.

Other marine invertebrates can be expected to experience disruption of body functions and reproductive capacity at minute concentrations. These organisms are near the base of the food chain and therefore any reduction in their population negatively impacts all higher trophic levels. The long-term persistence of DDT is a serious threat to the local marine fauna in the vicinity of the site. Benthic marine organisms that are detritivores or that ingest sediments directly can continue to move DDT into the food chain until approximately 30 cm of uncontaminated sediments have been naturally deposited.

The coastal currents in the vicinity have been documented to have expanded the zone of contaminated sediments as mapped by the NOAA National Marine Fisheries Service in 1972. As this process continues, previously safe zones will be contaminated.

Because of extensive sport- and commercial fisheries activity in the area, the process of bioaccumulation represents a threat to human health. DDT is known to have a residue accumulation in aquatic food chains of 100,000 to 2,000,000 times the water concentration. As a result of this acknowledged threat, local health officials have considered a seafood ban for the area since 1970.

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Contaminants and Concentrations

The primary contaminant of concern is DDT and its degradation products, DDE and DDD. Other materials may be present at the site. DDT levels in the soil on site range from .35 - 95,000 ppm. Contamination levels in storm water runoff measured in 1982 ranged from 187-695 ppb. Sediments in Joint Outfall 'D' pipes showed total DDT levels of 16-44% in 1977. DDT levels in wastewater discharges from the JWPCP outfall are shown in the following table.

	Concentration ppb	Mass Emission kg /year
1980	1.05	542
1981	0.84	422
1982	0.45	223
1983	0.375	183

Physical Extent of Contamination

There are at least four areas of contamination which must be considered. An estimated 340 tons of DDT is still contained in the top one and one half meters of soil on the manufacturing site. The mass of DDT contained in sediments in Joint Outfall 'D' is estimated to be 44 tons. The top one-third meter of sediments in a 29-square kilometer area surrounding the ocean outfall contains an estimated 200-275 tons of DDT. Finally, the sediments of Los Angeles and Long Beach Harbors are likely to have been contaminated by surface runoff via Dominguez Channel and airborne emissions.

Duration of Contaminant Release

The facility operated at this site from 1948 until 1982. Process water was discharged into the sewer system from about 1953 until 1970. Surface runoff from the site continued until about March 1985 when Montrose capped the contaminated soil with asphalt. There have also been reports of airborne contamination resulting from grinding operations

(8/25/85)

Ability to Document Injury or Loss

Current environmental monitoring is being conducted by the Southern California Coastal Water Research Project (SCCWRP), California State Department of Health Services, and Bodega Bay Marine Institute. These agencies monitor water chemistry and animal tissues for the presence of toxic substances, including DDT.

In 1981, white croaker in the vicinity of Cabrillo Pier were found to have a wet tissue concentration of 1.7 ppm. By 1985, five white croaker sampled from the pier contained 2.6 ppm DDT and 7.6 ppm was noted from white croaker taken from the White Point outfall.

Although the sample sizes were not statistically valid for the fish population at risk, the present tissue concentrations of DDT are not significantly different from the earlier samples taken in the 1970's. This time span and results of sampling are indicative of the persistence of DDT.

At the top of the food chain, coastal bottlenose dolphins were sampled for fat content of DDT. From 1981 to 1985, DDT concentrations in fat ranged from 126 to 2,070 milligrams per kilogram (mg/kg) of wet fat tissue. This is a clear indication of bioaccumulation. DDT has also been found in the blubber of the Baltic grey seal, the ringed seal, and the common grey seal. The impact to marine mammals is unclear since mammals are less sensitive to DDT than are invertebrates or fish.

Earlier concerns regarding risk to human health from DDT-contaminated marine organisms finally culminated in the 1985 State of California-announced ban on the taking and sale of marine resources from the Gerald Desmond Bridge to the White Point area. It is known that \$800,000 worth of white croaker were caught in 1984 from this zone. In addition to the loss of commercial fishing within the zone, local sportfishing infrastructure businesses report a 50% reduction in product sales. All commercial fish sales within the land area adjacent to the ban zone require a state certification that the seafood product was captured outside of the zone.

Although the most significant contribution of DDT to the environment is documented to have originated from Montrose Chemical Corporation, other sources are known to exist in the area. SCCWRP reported in 1985 that an annual total of 218 kg of DDT is discharged to the ocean waters from seven ocean outfalls from Ventura to San Diego. Of this amount, 183 kg comes from the White Point outfall. However, the daily contribution from these outfalls is below current levels of detection.

In February 1985, a storm event in Los Angeles was sampled for DDT. The Los Angeles River, draining 30% of the county, was determined to have contributed 900 grams of DDT for that single event. It is believed that the source was from agricultural areas and probably came from sediments.

Feasibility of Habitat or Resource Restoration

The extent of contamination in sediments of San Pedro Bay, and the

long residence time of DDT and its metabolites, make restoration of habitat very complex. Proposed solutions will require careful evaluation of pollution control programs in the region and ongoing harbor maintenance and development activities.

Site-Related Actions

Summary of EPA/State Response Actions

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| Aug. 1980 | EPA notified by Montrose of hazardous waste activity at site. |
| Dec. 1980 | EPA conducts RCRA investigation of site. |
| Nov. 1982 | Preliminary site CERCLA investigation. |
| Dec. 1982 | EPA issues a 3007/104 letter to Montrose. |
| May 1983 | EPA issues Administrative Order (106) to Montrose. |
| Continuous 1984 | EPA discusses Montrose's plans to investigate and remove site contamination. |
| 1985 | California announces ban on harvest and sale of fish. |

Present Stage of EPA Action at the Site

A RI/FS Final Workplan has been completed by EPA. Work outlined in the RI/FS is scheduled to begin in the summer of 1985 and is expected to take 14 months to complete. Work being conducted under the RI/FS will not include evaluation of DDT contamination in Los Angeles and Long Beach Harbor areas or San Pedro Bay. EPA may extend the scope of site-related studies to these areas in the future.

Responsible Parties with Adequate Means Identified

Montrose Chemical Corporation has been identified as the party responsible for on-site contamination. The company apparently has adequate means to conduct a site cleanup.

Interest of Co-Trustees in Damage Assessment Investigations

The U.S. Department of the Interior (DOI) has a strong interest in evaluating natural resource damages that may be attributable to the Montrose site. No formal study has been undertaken by DOI. The State of California has not yet considered natural resource damages associated with this site.

Site Chronology

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| 1947 | DDT manufacturing facility operational. |
| 1953 | Montrose receives permit to discharge into sewer system. |
| 1970 | Discharges to Los Angeles County sewer system discontinued. |
| 1982 | Manufacturing ceases, all buildings removed from site. |
| 1985 | Contaminated soil at site capped with asphalt. |

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