

Chemical Insecticide Corporation

Edison Township, New Jersey
Region 2

NJD980484653

Site Exposure Potential

Chemical Insecticide Corporation (CIC) is an abandoned, 2.3-hectare pesticide manufacturing facility in Edison Township, New Jersey (Figure 1). From 1958 to 1970, CIC produced insecticides, fungicides, rodenticides, and herbicides, including 2,4,5-trichlorophenoxy-acetic acid (2,4,5-T), noted for being contaminated with dioxins and related compounds. Improper manufacturing and product handling resulted in numerous complaints and citations against the company during the period of operation. The company went bankrupt in 1970 and in 1975 all buildings were demolished, leaving only concrete building pads, residual roadways, buried drums, and debris on the site (Ebasco 1990).

On-site surface water includes small amounts of standing water and numerous erosional drainage channels. The erosion channels flow eastward and discharge into a drainage ditch adjacent to the eastern site boundary. The ditch leads to a subsurface storm drain system that discharges to an unnamed creek. This unnamed creek flows for about 450 m before

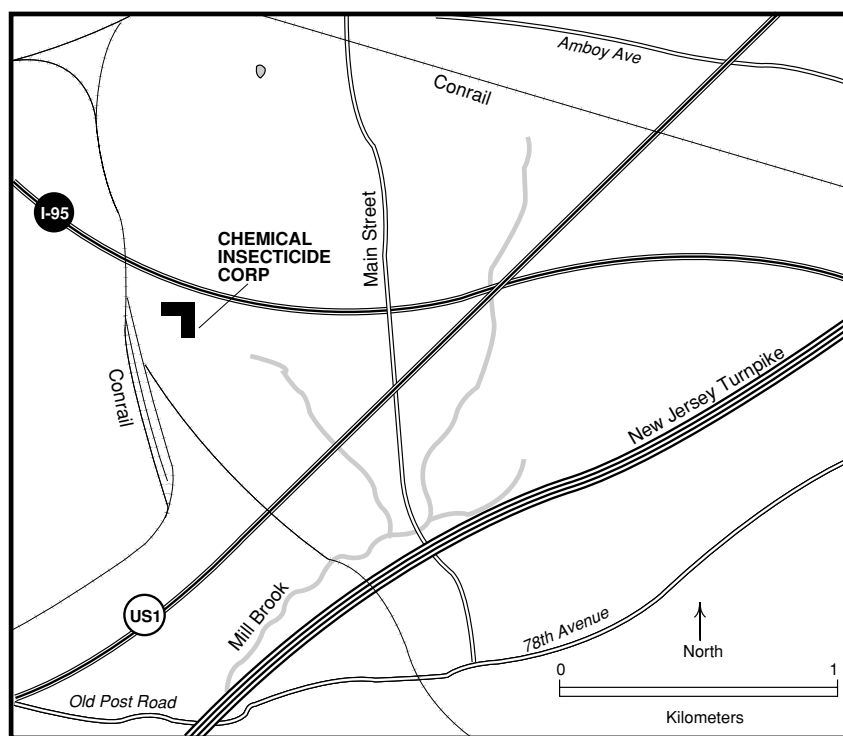


Figure 1.
The Chemical
Insecticide
Corporation,
Edison
Township, New
Jersey.

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Site-Related Contamination, *cont.*

copper, and zinc exceeded their respective AWQC in surface water off-site.

Polychlorinated dibenzodioxins (dioxins) and related compounds were measured in groundwater, surface water, sediment, and soil at the CIC site. The maximum concentration of

Table 1.
Maximum concentrations (µg/l) of contaminants of concern at the Chemical Insecticide site.

	Groundwater		Surface Water		AWQC ¹ Marine Chronic
	On Site	Off Site	On Site	Off Site	
INORGANIC SUBSTANCES					
arsenic	89200	63	1680	6.4	36
cadmium	1840	13	10	3	9.3
chromium	855	277	31	90	50
copper	2600	117	19	11	2.9
lead	543	136	<6.7	NR	5.6
mercury	47	ND	ND	NR	0.025
nickel	1560	414	46	NR	8.3
zinc	3890	1420	287	428	86
ORGANIC COMPOUNDS					
<u>Pesticides</u>					
alpha BHC	3400	0.2	<1.8	0.2	NA
gamma BHC	1400	NR			0.16**
dieldrin	55	NR	<0.3	<0.1	0.0019
endrin	230	ND	<0.3	<0.1	0.0023
DDT	2100	0.3	2.5	<0.1	0.001
chlordane	88	ND	ND	ND	0.004
Total Dioxins	.0004	ND	ND	ND	NA
1: Ambient water quality criteria for the protection of aquatic organisms. Marine chronic criteria presented (EPA 1986).					
** Marine acute criteria presented, no chronic criteria available.					
ND: Not detected at method detection limit.					
NR: Not reported.					
NA: Screening level not available.					

total dioxins in groundwater on-site was 0.0004 µg/l, 40 times greater than the chronic freshwater AWQC (there are no marine AWQC). No dioxins were detected in off-site groundwater samples. Total polychlorinated dibenzofurans (furans) were detected in one on-site surface water sample at 0.00024 µg/l. No dioxins or furans were detected in off-site surface water but were detected in on-site sediment and soil at very high levels.

Contaminants in the soil showed a pattern similar to the contamination in the sediment with both on-site and off-site concentrations exceeding the average levels observed in U.S. soil. Chromium was the only element that was present in soil at higher concentrations off-site than on-site.

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Site-Related Contamination, *cont.*

Table 2. Maximum concentrations (mg/kg) of contaminants in sediment and soil from the CIC site.

	Soil			Sediment		
	On-Site	Off-Site	Average U.S. Soil ¹	On -Site	Off-Site	ER-L ²
INORGANIC SUBSTANCES						
arsenic	8010	24	5	2660	79	33
cadmium	177	6	0.06	21	9.4	5
chromium	128	196	100	39	133	80
copper	4410	83	30	150	216	70
lead	1980	80	10	1170	1130	35
mercury	72	0.6	0.03	0.7	0.2	0.15
nickel	119	108	40	143	38	30
zinc	1040	226	50	552	1840	120
ORGANIC COMPOUNDS						
alpha BHC	45000	0.031	NA	590	.012	NA
gamma BHC	23000		NA	0.25	ND	NA
dieldrin	17.0	ND	NA	1.9	0.063	0.0004
DDT	6900	0.240	NA	820	0.074	3
chlordane	39	ND	NA	ND	ND	NA
PCBs	ND	ND	NA	0.42	10	50
Total Dioxins	0.0073	0.000022	NA	0.00079	ND	NA
TCDD	0.0018	ND	NA	0.00076	ND	NA
Total Furans	0.079	ND	NA	0.0091	ND	NA
1:	Lindsay (1979).					
2:	Effective range-low; the concentration representing the lowest 10 percentile value for the data in which effects were observed or predicted in studies compiled by Long and Morgan (1990)					
ND:	Not detected at method detection limit					
NA:	Screening level not available					

Trace elements were detected in sediment on- and off the site at concentrations above ER-L values (Long and Morgan 1990). Arsenic concentrations were greatly elevated on-site. Arsenic (15 mg/kg), cadmium (1.5 mg/kg), and lead (59 mg/kg) were detected in sediment from Mill Brook. Concentrations of other trace elements were not reported for Mill Brook sediment. Chromium, copper, and zinc had higher concentrations off-site than on-site.

Elevated concentrations of several pesticides were observed in groundwater on-site (Table 2). Pesticides were reported to be substantially lower in off-site groundwater samples, although results were not presented for all pesticides. Pesticide concentrations in surface water were reported to be less than the detection limits. However, the detection limits used for dieldrin, endrin, and DDT were much higher than their chronic marine AWQC. Pesticides were measured at high concentrations in sediment on site, particularly for a-BHC, dieldrin, and DDT, but sediment cores were lower off-site (Table 2). Pesticide concentrations were also high in soil on the site, but were

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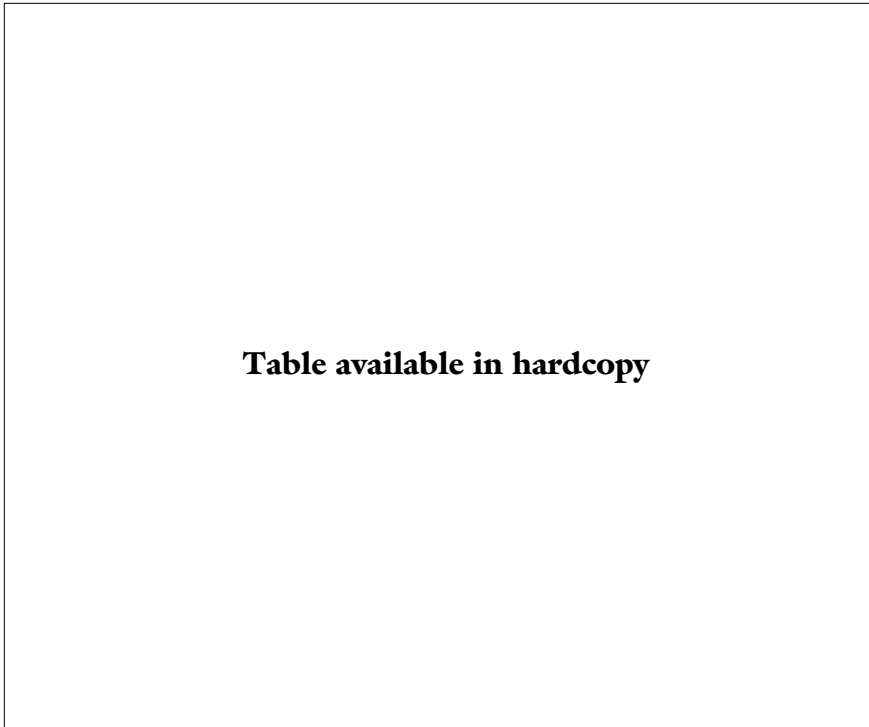
Site-Related Contamination,
cont.

lower in off-site soil. PCBs were not detected in surface water or groundwater samples from the CIC site or adjacent areas.

NOAA Trust Habitats and Species

Mill Brook is in a heavily industrialized area and has had chronic pollution problems. The New Jersey Department of Environmental Protection has not surveyed the stream since 1980; it is not known whether pollution abatement efforts have since restored anadromous species use of the stream. Blueback herring, alewife, blue crab, silverside, American eel, and mummichog may have used the stream, especially in the lower reaches near its confluence with the Raritan River (Stuart personal communication 1990).

Table 3.
Species and habitat use in the lower Raritan River.



The Raritan River serves as habitat for migratory and estuarine-dependent marine fish (Table 3; Boriek personal communication 1990; Stuart personal communication 1990). The Raritan River is a major crabbing and fishing area, though

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NOAA Trust Habitats and Species, *cont.*

only blue crab are harvested commercially. Recreational fisheries exist for blue crab, bluefish, striped bass, American shad, American eel, white perch, and summer flounder. American shad have been stocked in the upper Raritan River to encourage the restoration of a fishery upriver, but spawning has yet to occur (Boriek personal communication 1990).

Fishing advisories are in effect in the Raritan River for American shad, striped bass, bluefish, and white perch due to high levels of PCB contamination (Boriek personal communication 1990).

References

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