

Mixtures of weathered crude oil collected from the Gulf of Mexico and Corexit9500 applied to mallard duck eggs resulted in decreased spleen weights in hatchlings compared to controls.¹⁰ Both the crude oil and the dispersant significantly inhibited the reproduction of the earthworm *Caenorhabditis elegans*. Dose-dependent inhibitions of hatched larvae production were observed in worms exposed to both crude oil and dispersant. Importantly, the chemical dispersant Corexit9500A potentiated crude oil effects; dispersant-oil mixture induced more significant effects than oil- or dispersant-alone exposures. While oil-alone exposure and dispersant-alone exposure have none to moderate inhibitory effects on hatched larvae production, respectively, the mixture of dispersant and oil induced much more significant inhibition of offspring production.¹¹

Corexit9500A was also shown to result in acute effects on

Sampling Sites. Water samples were collected during 2 process research cruises and 12 monitoring cruises in the Gulf of Mexico (see Tables 1aS and 1bS, Supporting Information). The first process cruise sampled waters over the west Florida shelf (WFS) at stations along northern (NT) and southern (ST) transects aboard the R/V Bellows between July 10th and 17th, 2010 (Figure 1). The second cruise sampled waters in the northeastern Gulf of Mexico (NEGOM) to the east of the wellhead and in the vicinity of the DeSoto Canyon aboard the R/V Weatherbird II between August 3rd and 13th, 2010 (Stations PCB, FT, and DSH). Water samples were collected using a rosette sampler, equipped with 15 L Niskin bottles.

For monitoring cruise samples, five were conducted on the WFS and seven were conducted in the NEGOM (Table 1bS, Supporting Information, and Figure 1).

Toxicity Assays. Samples taken from the Niskin bottles were deposited in 120 mL EPA approved pre-cleaned sampling bottles. The Microtox microbial toxicity assay (SDI, Inc.) was used to estimate microbial toxicity as per the manufacturer's instructions using *Vibrio fischeri* as the light-emitting organism. The Acute Toxicity Assay was performed with the 81.9% Screening test selected from the Microtox Omni Software package. Two true replicates from each station were assayed each in duplicate using 2.0 mL of sample and 100 μ L of Reagent (that was reconstituted within 3 h of assaying). Both negative (autoclaved and 0.2 μ m filtered offshore seawater) and positive controls (0.133 mM phenol) were run during each assay.

The QwikLite toxicity assay (Assure Controls, Inc.) was used as a proxy for phytoplankton toxicity. This assay utilized the light emission from the dinoflagellate

used for rosette control, as well as the measurement of pressure, salinity, temperature, and output from several instruments. These instruments included a WETLabs, Inc. "ECO-FL" CDOM fluorometer and an "ECO-FLNTU" chlorophyll fluorescence and turbidity sensor. Fluorescence measurements were validated by comparison with discrete water sample

Table 1. Microbial and Phytoplankton Toxicity Response to Waters from the August 2010 Research Cruise to the NE Gulf of Mexico

station	depth	Microtox		QwikLite		Microscreen		DCMU		phyto-plankton >20 μ m cells/L	Simpson Species Diversity Index ng/L (or ppb)	Total TPH	uorescence ratio (F225/330 nm)
		% inhibition cont. light emission	range	% inhibition cont. light emission	range	% Increase λ phage abundance	STD	F _{DCMU} /F ₀	QSE				
PCB01Surface	2 m	<0	0	<0	0	2.37	0.124	1.76	8733	0.593	ND ^a	ND	
PCB01-10 m	10 m	ND		ND		ND		ND	ND	ND		11.00	
PCB01Bottom	18 m	<0	0	<0	0	-92.58	0.106	1.71	3067	0.340	151	ND	
PCB02Surface	2 m	<0	0	5.3	2.65	-21.6	0.1	0.88	5333	0.117	ND	ND	
PCB02Bottom	25 m	<0	0	<0	0	-15.43	0.36	1.53	2066	0.489	24	11.08	
PCB03-35 m	35 m	<0	0	21.35	10.7	26.11	0.37	1.07	10333	0.551	242	13.46	
PCB03-50 m	50 m	<0	0	54.4	23.5	-62.9	0.36	0.68	10390	0.664	165	5.41	
DSH09-3 m	3 m	11.8	1.18	1.65	0.825	43.9	0.57	1.09	ND	ND	ND	20.23	
DSH09-75 m	75 m	<0	0	11.5	5.7	-43.6	0.19	1.23	ND	ND	88	4.12	
DSH10-Surface	2 m	<0	0	14.4	7.2	66.17	0.52	1.17	333	0	74	4.88	
DSH10-60 m	60 m	<0	0	28.2	14.1	165.6	1.1	1.15	667	0	ND	8.02	
DSH10-400 m	400 m'	ND		ND		ND		0.68	2303	0.776	ND	8.71	
DSH08-Surface	2 m	18	3.44	6.2	3.1	158.9	0.54	1.03	405 333	0.193	203	ND	
DSH08-20 m	20 m	ND		ND		ND		ND	ND			0.95	
DSH08-215 m	215 m	<0	0	35	17.5	219.7	1.6	ND			ND	ND	
DSH08-275 m	275 m	<0	0	56.8	28.4	283.5	0.5	ND			298	3.27	
DSH08-1000 m	1000 m	ND	ND	ND		ND		ND			276	2.05	
FT1 ^b	2 m	10.7	2.25	ND		234.6	0.73	1.15			ND		

^aND, No data. Bold values indicate statistical significance for toxicity assays only. ^bSample collected from ship's surface

both surface (Figure 3B) and subsurface (Figure 3D) samples.

found to be negative, indicating that prophage induction was

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