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Document Title SUPP INFORMATION: RESULTS FROM A SCREENING STUDY IN EXPERIMENTAL ANIMAL TO ASSESS THE DEVELOPMENTAL TOXICITY OF REFINERY STREAMS SUSPECTED TO CONTAIN VARYING LEVELS OF CARBAZOLES		
Chemical Category CARBON BLACK OIL		

SUPPL

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June 3, 1992

8EHQ-0692-0576 SUPP

Document Control Officer (TS-790)
Attention: 8(e) Coordinator
Office of Toxic Substances
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, DC 20460

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EPA-OTS

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Subject: RCRA Section 8(e) Notice of a Refinery Stream
Suspected of Containing Varying Levels of
Carbazoles that are Contained in Carbon Black Oil
(CAS 64741-62-4; 8EHQ-1135-0576)

Dear Sir/Madam:

In accordance with the provisions of Section 8(e) of the Toxic Substances Control Act, the Atlantic Richfield Company (ARCO) is submitting information on the preliminary results of a screening study in experimental animals to assess the developmental toxicity of refinery streams suspected of containing varying levels of carbazoles.

ARCO initiated these follow-up studies due to previous reports by Mobil and ARCO (8EHQ-1185-0576) of adverse effects on rat fetuses after dermal exposure to carbon black oil (CBO) a material which contains carbazoles. The objective of the ARCO studies being reported in this letter was to determine the maternal and fetal toxicity of selected refinery streams that like CBO may contain carbazoles.

For the first part of this study, VDF Diesel (VDFD, CASN 68410-00-4) was dermally administered to groups of pregnant rats during gestational days 0 to 20. Animals received doses of 0, 50, 150 and 500 mg/kg of the test material. The data indicate that there were significant decreases in the mean number of live pups per litter and pup survival to day four, and a significant increase in gestation length in the 500 mg/kg dose group. There also were significant decreases in the mean body weight of live pups at days 0 and 4 at the 150 and 500 mg/kg dose levels. These apparent findings were associated with a concomitant decrease in maternal body weight gain that was first observed on gestational days 0-4. The dams in the 500 mg/kg dose group had a 43% decrease in body weight gain compared to the control group on days 0-4. VDFD has been previously reported to produce fetal toxicity at 500 mg/kg, however, the current test results have some differences from those previously reported.

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The second experiment was performed on Atmospheric Tower Bottoms (ATB, CASN 64741-45-3). Animals received doses of 0, 50, 333 and 1000 mg/kg during gestational days 0 - 20. In the 1000 mg/kg group, there were significant decreases in the mean body weight of live pups on days 0 and 4, and a significant increase in the gestation length. These findings were associated with a concomitant decrease in maternal body weight gain compared to the controls: 25% decrease on days 0-4 and 21% decrease on days 0-20.

The third experiment was performed on Hydrodesulfurized Heavy Vacuum Gas Oil (HHVGO, CASN 64742-36-5). Animals received doses of 0, 50, 333, and 1000 mg/kg during gestational days 0 - 20. In the 1000 mg/kg dose group, 12 females had positive signs of mating, however, none of the dams gave birth to pups. In the 333 mg/kg dose group, the number of live pups per litter was significantly decreased from 14.9 to 9.5 (-36%). These findings were associated with a concomitant decrease in maternal body weight gain compared to the controls: 83% decrease on days 0-4 and 36% decrease on days 0-20 in the 333 mg/kg group, and 126% decrease on days 0-4 and 83% decrease on days 0-20 in the 1000 mg/kg group.

The last experiment in this report concerns additional work on Carbon Black Oil (CBO, CASN 64741-62-4). Animals received doses of 0, .05, 10 and 50 mg/kg during gestational days 0 - 20. In the 50 mg/kg group, significant decreases were measured in mean number of live pups per litter and mean body weight of live pups at day 0. In addition, there was a significant increase in gestation length at this dose level. These findings were associated with a concomitant decrease in maternal body weight gain compared to the controls: 42% decrease on days 0-4 and 45% decrease on days 0-20.

The data from these studies have received only a preliminary review. Additional statistical analysis and historic controls comparisons will be performed for the final report. This additional analysis may change the preliminary summary of adverse effects listed above.

Our current MSD Sheets on the refinery streams tested in these studies are being reviewed with these results in mind.

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We are attaching the preliminary information on these studies which was contained in a letter from the testing laboratory. EPA will be sent a copy of the final reports once they are received by ARCO.

Sincerely yours,

William D. Leake

William D. Leake
WDL/FJK/isc

Attachment

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Carbon Black 011
 CASN 64741-62-4
 Preliminary Data
 F-229

DRAFT 4

	F-227 (mg/kg)			
	0.0	0.05	10.0	50.0
Number of females	15	12	12	12
Number pregnant	15	8	11	10
Number giving birth to live pups	15	8	11	4
Gestation length (Days)	22.1	22.1	22.2	22.8**
Mean body weight change (g) females				
Gestation Days 0 - 4	24	30	26	14
Gestation Days 4 - 8	17	18	16	12
Gestation Days 8 - 12	23	22	23	20
Gestation Days 12 - 16	33	32	30	20
Gestation Days 16 - 20	59	54	53	20
Total number of live pup				
Day 0	208	100	166	27
Day 4	181	86	158	20
Mean number of live pups/litter				
Day 0	13.9	12.9	15.1	6.75**
Day 4	12.1	10.8	14.4	5.00
Survival to Day 4	88%	80%	95%	74%
Mean body weight (g) of live pups				
Day 0	6.68	6.33	6.45	5.60**
Day 4	8.97	3.74	8.57	7.42
Body weight change (g)	2.29	2.41	2.12	1.82

Maternal Observations: Vaginal discharge at 50.0 mg/kg

Statistical analyses are complete for the following data points on this table: gestation length, live pups/litter on Day 0, pup survival on Day 4, pup body weights on Days 0 and 4.

* = $p < 0.01$

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