

FROM James O. Jackson AT Harmarville DATE August 19, 1975
TO Mr. H. E. Runion AT Pittsburgh REFERENCE HSL-005-67
SUBJECT PLASTIGAMA, ECUADOR AIR F75-067
SAMPLING: JUNE 21-23, 1975

Attached is a data summary of analytical results from the nineteen air samples collected at Plastigama. Table I presents organic vapor levels while Table II shows the aerosol concentrations. Vinyl chloride monomer was not found on any of the fifteen submitted charcoal tubes.

Organic vapor concentrations in Table I include benzene, butyl acetate, isopropanol, tetrahydrofuran, toluene, xylene and an estimate of total hydrocarbon content. In thirteen of the fifteen charcoal tube samples collected at Plastigama, breakthrough was observed. Here, breakthrough is defined as that condition when approximately one-third or more of a compound found on the front section of the charcoal tube is on the back-up layer.

Since vinyl chloride monomer and butane were not determined in any sample, and because trace levels of pentane were observed in only two (No. 2 and 16), it is concluded that the light ends passed through the sampling tube while the heavier compounds were retained. Of course, the light ends were adsorbed during the early stages of collection, however, larger molecules preferentially occupied the adsorption sites when the light ends were swept off. In field sample numbers 8, 11, 12 and 17, the back-up section concentration equaled or exceeded the front layer level, thus raising considerable doubt as to the true concentration at the time of sampling. It is suggested that these data represent the minimum levels during sample acquisition. There is also the possibility that high relative humidity could produce a phenomena similar to the situation described here, although it has not been proven yet. I believe it would yield the same effect, i.e., few, if any, light ends. When the Industrial Hygiene Laboratory has sufficient time, we need to investigate the potential effect of moisture on hydrocarbon adsorption sampling. Since butanes were absent in all samples, and because of the reasons stated above, it follows that vinyl chloride should also be absent, as it elutes from the gas chromatograph before butane.

DATE 8-19-75

FROM James O. Jackson

TO Mr. H. E. Runion

SHEET NO. 2

A listing of fifty compounds that were utilized as a data base for vapor quantitation is shown in Table II. Here, a variety of organic vapors are discernable which include various solvents as well.

Gravimetric measurements of airborne aerosols are presented in Table II where levels of 1.8 to 6.7 mg m⁻³ are noted.

Also attached is a gas chromatogram of the weathered gasoline with added stabilizer. It can be noted that while a substantial number of compounds are identified, many are not.

James O. Jackson

James O. Jackson, Ph.D.

Attachments

JOJ:jks



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CUSAROSS 00169

TABLE I

DATA SUMMARY: ORGANIC VAPORS AT PLASTIGAMA, JUNE 21-23, 1975

HSL Sample Number	Field Sample Number	Sample Collection Date	Sample Volume Liters	Isopropyl Alcohol ppm	Tetra Hydro Furan ppm	Benzene ppm	Butyl Acetate ppm	Toluene ppm	Xylene ppm	Total Hydrocarbon Estimate ppm
HSL-005-67A	1	6-21-75	102	75	<.5	<.5	<.5	<.5	Tr ¹	75
HSL-005-67B	2	6-21-75	72.0	140	Tr	.5	<.5	<.5	Tr	140
HSL-005-67C	3	6-21-75	141	<.5	<.5	<.5	<.5	2	Tr	7
HSL-005-67D	4	6-21-75	143	<.5	1	1	2	11	-	22
HSL-005-67E	5	6-21-75	160	-	<.5	<.5	4	10	<.5	20
HSL-005-67F	6	6-21-75	241	<.5	1	<.5	1	2	1	65 ²
HSL-005-67G	7	6-22-75	148	40	3	<.5	4	1	6	150 ²
HSL-005-67H	8	6-22-75	230	-	<.5	1	Tr	6	4	27
HSL-005-67K	11	6-22-75	392	<.5	-	<.5	-	-	-	1
HSL-005-67L	12	6-22-75	452	<.5	-	<.5	-	-	-	1
HSL-005-67M	13	6-22-75	64.0	-	<.5	4	2	50	125	810 ³
HSL-005-67N	14	6-23-75	316	<.5	2	1	3	7	17	115 ³
HSL-005-67O	15	6-23-75	347	<.5	<.5	<.5	-	-	-	1
HSL-005-67P	16	6-23-75	257	<.5	<.5	1	<.5	<.5	<.5	12
HSL-005-67Q	17	6-23-75	203	-	<.5	-	6	11	1	23

¹Tr = Trace

²Mostly weathered medium to heavy aliphatics, i.e., light ends missing

³Weathered aliphatics and aromatics

TABLE II

DATA SUMMARY: AEROSOL CONCENTRATIONS AT PLASTIGAMA, JUNE 22-23, 1975

HSL Sample Number	Field Sample Number	Filter Number	Sample Collection Data	Sample Volume Liters	Particulate Loading mg m ⁻³
HSL-005-67I	9	75040411	6-22-75	672	3.30
HSL-005-67J	10	75040410	6-22-75	594	2.34
HSL-005-67R	18	75040408	6-23-75	513	1.79
HSL-005-67S	19	75040409	6-23-75	99	6.67

ISTD
RTW: 2

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CAL #	RT	AMT/AREA
REF: 1	24.77	1.7449 E- 6
2	1.82	1.1800 E- 6
3	1.96	1.1800 E- 6
4	2.67	1.1800 E- 6
5	2.79	1.1800 E- 6
6	3.00	1.1800 E- 6
7	4.00	1.1800 E- 6
8	4.23	1.1800 E- 6
9	4.35	3.2300 E- 6
10	4.45	1.1800 E- 6
11	4.50	8.3322 E- 6
12	6.87	1.1800 E- 6
13	6.21	1.1800 E- 6
14	6.58	1.1800 E- 6
15	6.31	1.1800 E- 6
16	6.50	1.2000 E- 6
17	6.61	1.2000 E- 6
18	7.32	1.2000 E- 6
19	7.99	1.1799 E- 6
20	8.69	1.2000 E- 6
21	8.83	1.2000 E- 6
22	9.76	1.2000 E- 6
23	9.78	1.2000 E- 6
24	10.59	1.2000 E- 6
25	11.04	1.2000 E- 6
26	11.06	1.2000 E- 6
27	11.35	1.2000 E- 6
28	12.10	1.2000 E- 6
29	12.74	1.3000 E- 6
30	12.89	1.3000 E- 6
31	13.38	1.3000 E- 6
32	13.47	1.3000 E- 6
33	13.70	1.4000 E- 6
34	15.47	1.4000 E- 6
35	15.70	1.4000 E- 6
36	16.23	1.4000 E- 6
37	17.43	1.4000 E- 6
38	17.60	1.4000 E- 6
39	19.22	1.4000 E- 6
40	19.39	1.4000 E- 6
41	20.87	1.4000 E- 6
42	21.03	1.4000 E- 6
43	22.41	1.4000 E- 6
44	22.56	1.4000 E- 6
45	25.38	1.4000 E- 6
46	27.50	1.4000 E- 6
47	28.69	1.4000 E- 6
48	30.81	1.4000 E- 6
49	35.60	1.4000 E- 6
50	40.56	1.4000 E- 6

XF: 1.2000 E+ 0

HYDROCARBONS

Bibenzyl
Methane
Ethane
Iso-Butane
Vinyl Chloride
n-Butane
Iso-Pentane
1-Pentene
Iso-Propyl Alcohol
n-Pentane
Acetone
2-Methyl Pentane
Hexane
n-Hexane
1-Hexene
Methyl Ethyl Ketone
Tetra Hydrofuran

Benzene
1-Heptene
2,2,4-Trimethylpentane
Butyl Acetate
Dimethylhexane
Toluene
2,2,5-Trimethylhexane
1-Octene
n-Octane
p-Xylene
Ethyl Benzene
m-Xylene
1-Nonene
o-Xylene
Nonane
1-Decene
n-Decane
p-Cymene
1-Undecene
Undecane
1-Dodecene
n-Dodecane
1-Tridecene
n-Tridecane
1-Tetradecene
n-Tetradecane
n-Hexadecane
Cyclohexanone
n-Octadecane
n-Nonadecane
n-Heneicosane
n-Docosane

ISTD AMT: 6.1490 E- 1