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AROCLOR WATER SOLUBILITY

TO

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An analytical procedure for extracting, concentrating, and measuring Aroclor at the sub ppm level in water has been developed and verified with Aroclor "spiked" tap water samples (Table I).

This procedure was employed to determine the tap water solubility of Aroclor 1242, 1248 and 1254 (Table II).

The Aroclor saturated tap water samples used in this study were prepared in the following manner: two 60-70 g. portions of each Aroclor fluid were placed in 32oz. narrow neck screw top glass bottles and 500 ml. of tap water (South Second Street) added to each. The bottles were then placed on a roller mill, rolled for 24 hours and allowed to stand undisturbed at room temperature (25°C) until analyzed. The period of time between preparation and analysis was approximately 4-5 months.

Inspection of EC/GC traces and the data in Table II indicates that the solubility of Aroclor is a function of both the amount of chlorination and the position. This anticipated behavior makes absolute quantification difficult since a standard with the same isomer distribution of the water solubilized material is impossible to prepare. Therefore, the "Aroclor found" was calculated in this manner: the original Aroclor in question was used as a standard and a calibration curve prepared by plotting the peak height of the major isomers versus µg Aroclor. The peak height response of the samples were then totaled, corrected for a tap water blank response and the amount of "Aroclor found" determined from the calibration curve. A rough idea of the error inherent in this procedure can be obtained by using 1242 as a standard for 1248, etc. A deviation on the order of $\pm 10\%$ was experienced.

The data in Table II also seems to indicate that a stable Aroclor-water emulsion is formed at approximately twice their solubility levels.

The Pydraul fluids being multi-component systems are a completely different story and as such will require much more effort. At this point, I think we should probably clarify what information is actually desired and if the need for this information can be justified in terms of the effort necessary to obtain it.

ES
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Attachments - 2

TABLE I
RECOVERY OF AROCLOR FROM SPIKED TAP WATER SAMPLES**
USING EC/GC

<u>Sample Number</u>	<u>ppb Aroclor Added</u>	<u>Sample Volume (ml)</u>	<u>ppb Aroclor Found</u>	<u>Per Cent Recovery</u>	<u>Comments</u>
OR 88932 #1	1980	250	1960	99.0	Aroclor 1242. Samples concentrated with vac. rot. evap. Results obtained 9-6-68.
OR 88932 #2	1980	250	-----*	-----	
OR 88945 #1	270	225	266	98.5	Aroclor 1254. Samples concentrated & Kundera-Danish evaporative concentrators. Results obtained 12-13-68
OR 88945 #2	270	225	266	98.5	
OR 88945 #3	540	225	577	107.0	
OR 88945 #4	540	225	577	107.0	

The sample preparation and work up outlined for water samples was employed. The results were quantified by preparing a calibration curve using a hexane solution of the Aroclor 1242 and 1254 used to spike the water samples. The major isomer peak area was used to construct the curve. The water samples were spiked by injecting μ l amounts of a concentrated acetone***-Aroclor solution.

* Sample contaminated - results discarded.

** Data used to confirm proposed water sample work up procedure and concentration techniques.

*** Spiked water samples contained 40-60 ppm Acetone.

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TABLE II
SOLUBILITY OF AROCLOR IN TAP WATER

<u>Sample Ident.</u> <u>Number</u>	<u>Grams Aroclor</u> <u>Equilibrated</u>	<u>Sample</u> <u>Vol. (ml)</u>	<u>ppb Aroclor</u> <u>Found</u>	<u>Average</u>
1242				
OR 88936-1+	67.5	225	193	203 $\pm$ 10
-2+	67.5	225	213	
-1*	55.1	250	372	375 $\pm$ 3
-2*	55.1	250	378	
1248				
OR 88936-1+	70.5	250	92	106 $\pm$ 14
-2+	70.5	250	120	
-1*	70.6	224	196	209 $\pm$ 13
-2*	70.6	225	222	
1254				
OR 88936-1+	73.2	250	51	50 $\pm$ 2
-2+	73.2	250	48	
-1*	69.7	224	134	139 $\pm$ 5
-2*	69.7	225	143	

+ Aqueous sample filtered through pre-wetted Whatman #2 filter paper.

* Aqueous sample carefully siphoned from bottle.

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