Family of 4 consumes 1.8 Liters / month

$\frac{1.8}{4} = 0.45$

(1)

450

1.41

450

1800

450

634.50

21.15

30 / 634.5

60

34

30

45

30

150

.45 L / Mo / Person - Rice Oil

.45 L = 450 ml / mo / person

450 × SG 1.41 = 634.5 grams

634.5 grams / mo / person

$\frac{634.5}{30}$ = 21.15 grams / day / person = 21150 mgs

.305

70 / 21.15

210

150

S.G. 1.41 Used

Same As PCB-1248

Assume weight 154 # / person

$\frac{154}{2.2}$ = 70 Kg / person

Assume wt 110 #s or 50 Kg

21,150 mgs / day / person

$\frac{21150}{50}$ = 423 mgs / Kg / day (oil)

$\frac{21,150}{70}$ = 302 mg / Kg / day

Amount of oil consumed

@ 200 ppm = 423 × .0002 = 0.0846 mgs

302 × .0002 = 0.0604 mg PCB / Kg / day

On Page 63 "The First Interim Report By The Analytical Sub-Committee" Nov 18, 1968 - Translation of Japanese Article.

Discussion a) From the above (a) and (b) results the patients oil was confirmed to contain 1000 - 1500 ppm (as Cl) organic chlorine

Control oil Page 62 - Contained Trace or none.

0277637

It can be concluded since the Cl content of Kano-Chlor is about 48% then the patient oil contains 2000 - 3000 ppm Kano-Chlor

$\frac{1000 - 1500}{.48}$ = Approx 2000 - 3000 ppm Kano-Chlor

PCB-ARCH0744086

(2)

On Page 7 "The Symptomatology of Yusho "Chlorohephenyls Poisoning) in Dermatology"
Translation of Japanese article

3 paragraph states about 200 gram of Kanechlor 400 was contained in oil taken by patients.

Note: This translation is in conflict with Page 63 1st Interim Report.

On Page 7 report above states

The amount taken by patients family (4 persons on average) was 1.8 L within a month

1.8 L per family of 4 is
0.45 l per person per month
$\frac{0.45 L}{30}$ = 0.015 L per person / day

l = Liters
1 L = 1000 ml

0.015 L / person / day is 15.2 ml

The S.G. of 1248 from Table A-3 Page A 23 of Monsanto Specification is 1.405 @ 65°C
1.415 @ 15.5°C

Assume wt 50 Kg - 110#

0277638

A S.G. of 1.41 is used for the calculation below.

$\frac{21.15 \text{ gram}}{50}$ = 4233 mgs/Kg/day of oil if oil has S.G. 1.41

15.2 ml x 1.41 = 21.15 grams / person / day of oil

On Page 5 "Epidemiologic Study On "Yusho" a poisoning caused by Rice Oil contaminated with polychlorinated hephenyls"
Translation of Japanese article

PCB-ARCH0744087

(3)

Top of page 5: rice oil produced or shipped and used by patients had been contaminated with about 2000 ppm of Kanechlor 400.

In middle of page: "The minimum total dose of Kanechlor 400 to cause the disease was estimated to be around 0.5 g. Note this is 500 mg
Page 5

On Page E 33 (E Biological Effects) a summary at back of books.

"More recently, Kuratsume that among the Yusho case studied the smallest toxic dose was 500 mgs ingested over approximately 50 days by an individual weighing approximately 50 Kg."

This calculates to $\frac{500}{50\ Kg} = 10$ mgs/Kg over 50 days

$\frac{10\ mg/Kg}{50\ Days} = 0.2$ mgs/Kg/day

On Page E 43 - E Biological Effects

In man it has been estimated that as little as 10 mg/Kg over 50 days causes chloracne.

Note 0.2 mgs/Kg/day × 50 days = 10 mg/Kg

0277639

PCB-ARCH0744088

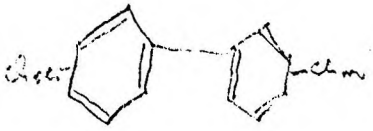
(4)

2 ppm ice
5 ppm ice fresh

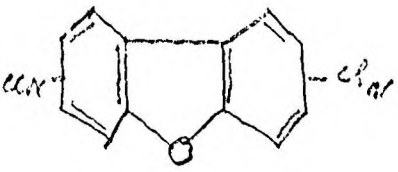
continued Table 5
Page E-34 + E-33

Relation between the amounts of K rice oil used by patients and their clinical severity

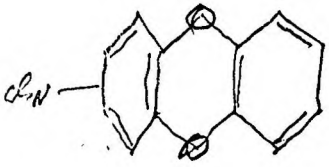
Amount of Oil	Non-Affected	Light Case	Severe Case	Total
Less than 720 ml	10 (12.0%)	39 (49.0%)	31 (39.0%)	80 (100%)
720 - 1440 ml	0 (0.0)	14 (31.0)	31 (69%)	45 (100)
More than 1440 ml	0 (0.0)	3 (14.0)	18 (86.0)	21 (100)



Chlorinated biphenyl
m = 1, 2, 3, 4, 5



Chlorinated dibenzofuran
n = 1, 2, 3, 4
Highly Toxic



Chlorinated dibenzodioxin
N = 1, 2, 3, 4
Highly Toxic

FDA Proposed Fed. Reg. 37(34) March 18, 1972

Milk (Fat basis)	2.5 ppm
Dairy Products (F.B)	2.5
Poultry (F.B.)	5.0
Eggs	0.5
Finished Animal feed	0.5
Animal Feed Components	5.0
Fish (Edible Portion	5.0

0277640

PCB-ARCH0744089

(5)

Weights of Persons
100#s = 45.5 Kg assume all eat 4.4 lbs/day
110#s = 50.0 Kg or 2 Kg
154#s = 70.0 Kg

See Page 4 My Notes
Using amounts of Rice Oil From Table 5 and assuming A Specific Gravity of 1.2 For Rice Oil

Amount of Oil	Grams Wt. of Oil Using 1.2 SG
720 x 1.2 =	864.0 grams oil

1440 x 1.2 = 1728

Using the lowest figure of 720 ml oil or 864 g and 200 ppm PCB in oil and 50 days exposure
864 g x 1000 mg/g = 864,000 mgs of Rice oil

864,000 mg x 200 ppm PCB in oil =

864,000 mg x .0002 = 172.8 mgs PCB

$\frac{172.8 \text{ mgs PCB}}{50 \text{ Kg}}$ = 3.46 mgs PCB/Kg

$\frac{3.46 \text{ mgs PCB/Kg}}{50 \text{ days}}$ = 0.069 mgs PCB/Kg/day

Using the lowest figure 720 ml oil or 864 grams

864,000 mgs rice oil x 2000 ppm = 1728 mgs PCB

$\frac{1728 \text{ mgs PCB}}{50 \text{ Kg}}$ = 34.6 mgs PCB/Kg

$\frac{34.6 \text{ mgs PCB/Kg}}{50 \text{ days}}$ = 0.69 mgs PCB/Kg/day

0277641

PCB-ARCH0744090

Using the highest figure table 5 of 1440 ml of oil consumed and assuming Specific Gravity of the oil as 1.2 wt of patient 50 Kg and 50 days exposure

Calculation using 200 ppm PCB in oil

1440 ml oil × 1.2 = 1728 grams of oil

1728 × 1000 = 1,728,000 mgs oil

1,728,000 mgs oil × 200 ppm PCB in oil = 345.6 mgs PCB

$\frac{345.6 \text{ mgs PCB}}{50 \text{ Kg}}$ = 6.91 mgs PCB/Kg

$\frac{6.91 \text{ mgs PCB/Kg}}{50 \text{ days}}$ = 0.138 mgs PCB/Kg/day

or 138 µg PCB/Kg/day

Calculation using 2000 ppm PCB in oil

1,728,000 mgs oil × 2000 ppm PCB in Oil = 3456 mgs PCB

$\frac{3456 \text{ mgs PCB}}{50 \text{ Kg}}$ = 69.1 mgs PCB/Kg

$\frac{69.1 \text{ mgs PCB/Kg}}{50 \text{ days}}$ = 1.38 mgs PCB/Kg/day

or 1380 µg PCB/Kg/day

0277642