

AN 1348

EXPOSURE CONCENTRATION		μ g VC METABOLIZED		
PPM	μ g/l	4 hr Rat	8 hr Man	24 hr Man
10,000	25,600	5,521	1,620	4,860
6,000	15,360	5,403	1,586	4,758
2,500	6,400	5,030	1,477	4,431
500	1,280	3,413	1,002	3,006
250	640	2,435	715	2,145
50	128	739	217	651
5	12.8	84	24.6	73.8
3		51		
1	2.56	17	4.97	14.9

→ W. Ban
Pitch or keep
PVC/UCM

RECEIVED
MAR 07 1994
W. W. BAN

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based on Toxicol. Appl. Pharmacol.
publication on pharmacokinetics
of UCM by Dow (Elsring, Watonabe, etc)
R. K. Hinder
1978

BFG17452

1. Minute Volume rat (300 g) = 300 ml/min

2. Minute Volume mouse (25 g)^a = 37.5 ml/min

3. Rat gavage doses in NCI bioassay *Experiment BT 11*

low dose = ~~50 to 75 or 62.5 mg/kg average~~
3.33
middle dose = ~~16.65 mg/kg~~
high dose = ~~100 to 175 or 125 mg/kg average~~
50.0

4. Mouse gavage doses in NCI bioassay

low dose = 75 to 100 or 87.5 mg/kg average
high dose = 150 to 200 or 175 mg/kg average

5. Total Rat gavage dose/day (300 g rat)

0.999
low dose = ~~18.75 mg/day~~
middle dose = ~~4.995 mg/day~~
high dose = ~~37.5 mg/day~~
15.0

6. Total Mouse gavage dose/day (25 g mouse)

low dose = 2.1875 mg/day
high dose = 4.375 mg/day

7. Rat 8-hour Inhalation Equivalent of *3* for uptake levels of 25, 50, 75 and 100% *a 50%*

Rat 8-hour volume = 144 *litre* X/8 hours

low dose = ~~18.75 mg/144~~ *0.999* X = ~~0.13 mg/l~~ *litre 0.0069*
middle dose = ~~4.995 mg/144~~ X = ~~0.0347 mg/l~~
high dose = ~~37.5 mg/144~~ X = ~~0.26 mg/l~~
15.0 *0.1042*

ppm (25°C) = $\frac{24450}{\text{m.w.}}$ x mg/l; m.w. (EDC) = ~~98~~ *100* 62.5 *vcm*

Uptake (α)

100% low dose = ~~32.4~~ ppm *8.7*
high dose = ~~64.8~~ ppm
middle dose = ~~40.8~~ *13.6 ppm*

75% low dose = ~~43.2~~ ppm
high dose = ~~86.5~~ ppm

50% low dose = ~~64.8~~ ppm *5.4 ppm*
high dose = ~~129.6~~ ppm
middle dose = ~~80.6~~ *27.2 ppm*

25% low dose = ~~129.6~~ ppm
high dose = ~~259.2~~ ppm

^a 1.5 x weight

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8. Mouse 8-hour Inhalation Equivalent of 6 for uptake levels of 25,50,75 and 100%

Mouse 8-hour volume = 18.0 l/8 hours

low dose = $2.1875 \text{ mg}/18 \text{ l} = 0.12 \text{ mg/l}$
high dose = $4.375 \text{ mg}/18 \text{ l} = 0.24 \text{ mg/l}$

$$\text{ppm (25}^\circ\text{C)} = \frac{24450}{\text{m.w.}} \times \text{mg/l; m.w. (EDC)} = 98$$

Uptake (α)

100% low dose = 29.9 ppm
high dose = 59.9 ppm

75% low dose = 39.9 ppm
high dose = 79.9 ppm

50% low dose = 59.9 ppm
high dose = 119.8 ppm

25% low dose = 119.6 ppm
high dose = 239.6 ppm

9. Rat 6.5-hour Inhalation Equivalent of 5 for uptake levels of 25,50,75 and 100%

Rat 6.5 hour volume = 117 l/6.5 hours

low dose = $18.75 \text{ mg}/117 \text{ l} = 0.16 \text{ mg/l}$
high dose = $37.5 \text{ mg}/117 \text{ l} = 0.32 \text{ mg/l}$

$$\text{ppm (25}^\circ\text{C)} = \frac{24450}{\text{m.w.}} \times \text{mg/l; m.w. (EDC)} = 98$$

Uptake (α)

100% low dose = 39.9 ppm
high dose = 79.8 ppm

75% low dose = 53.2 ppm
high dose = 106.4 ppm

50% low dose = 79.8 ppm
high dose = 159.6 ppm

25% low dose = 159.6 ppm
high dose = 319.2 ppm

10. Mouse 6.5-hour Inhalation Equivalent of 6 for uptake levels of 25,50,75 and 100%

Mouse 6.5-hour volume = 14.6 l/6.5 hours

low dose = $2.1875 \text{ mg}/14.6 \text{ l} = 0.15 \text{ mg/l}$
high dose = $4.375 \text{ mg}/14.6 \text{ l} = 0.30 \text{ mg/l}$

$$\text{ppm (25}^\circ\text{C)} = \frac{24450}{\text{m.w.}} \times \text{mg/l; m.w. (EDC)} = 98$$

cont'd

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10. - cont'd

Uptake (α)

100% low dose = 37.4 ppm
high dose = 74.8 ppm

75% low dose = 49.9 ppm
high dose = 99.7 ppm

50% low dose = 74.8 ppm
high dose = 149.6 ppm

25% low dose = 149.6 ppm
high dose = 299.2 ppm

RKH/KC

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5. Rat ~~to~~ 24 hour Inhalation Equivalent of #3 for a 50% uptake level.

Rat 24 hour volume = 432 liters / 24 hours

$$\begin{aligned} \text{low dose} &= 0.999 \text{ mg/day} \div 432 \text{ liters/day} = 0.0023 \text{ mg/l} \\ \text{middle dose} &= 4.995 \text{ mg/day} \div 432 \text{ liters/day} = 0.0116 \text{ mg/l} \\ \text{high dose} &= 15.0 \text{ mg/day} \div 432 \text{ liters/day} = 0.0347 \text{ mg/l} \end{aligned}$$

$$\text{ppm}(25^{\circ}\text{C}) = \frac{24450}{\text{MW}} \times \text{mg/l}; \text{MW (VCM)} = 62.5$$

Uptake (x)

$$\begin{aligned} 50\% \quad \text{low dose} &= 0.9 \text{ ppm} \\ \text{middle dose} &= 4.5 \text{ ppm} \\ \text{high dose} &= 13.6 \text{ ppm} \end{aligned}$$

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