

COMPUTATION SHEET

LOCATION <i>S₁ 90 Dispersal</i>	ENGINEER <i>W.H. Ray</i>	NUMBER
PROJECT <i>19-1398-29</i>	UNIT	DATE <i>7-6-64</i>

$$\begin{aligned}
 750 \text{ cc} \times 6.3 \text{ curies/cc} &= 4725 \text{ curies} \\
 &\times 14.37 \text{ cal/min with} \\
 125 \text{ cc/min} &= \frac{6.78 \times 10^4 \text{ cal/min}}{540 \text{ cal/cc}} \\
 &\text{of 3 curies/cc solution} \\
 \text{Half is vented to cell atmos. } 10^{-4} \text{ activity entrainment postulated} \\
 \frac{125 \times 3 \times 10^{-4}}{2} &= 7.88 \times 10^{-2} \text{ C/min dispersed into air} \\
 &= 3.13 \times 10^{-4} \text{ C/sec}
 \end{aligned}$$

$$5800 \text{ cfm} = 1585 \text{ m}^3/\text{min} = 2.64 \text{ m}^3/\text{sec} \text{ stack dilution}$$

$$\frac{7.88 \times 10^{-2}}{1.585 \times 10^3} = 1.19 \times 10^{-4} \text{ C m}^{-3} = X \text{ in Kharkov}$$

for 10 m. stack:

Condition "C" slightly unstable, max concentration ~ 60 m.
with 5 m/sec wind. $\left(\frac{Q}{Q_{\text{max}}}\right) = 3.6 \times 10^{-4}$

Condition "F" Moderately stable, max concentration ~ 500 m.
with 3 m/sec wind. $\left(\frac{Q}{Q_{\text{max}}}\right) = 3.2 \times 10^{-4}$

$$3.13 \times 10^{-4} \times 3.6 \times 10^{-4} = 1.13 \times 10^{-7} \text{ C m}^{-3}$$

$$\frac{25 \text{ rem}}{36 \text{ rem/sec inhaled}} = 6.95 \times 10^{-7} \text{ curies inhaled} \rightarrow 25 \text{ rem from Sal. S₁ 90$$

$$\begin{aligned}
 \frac{6.95 \times 10^{-7} \text{ C}}{1.13 \times 10^{-7} \text{ C m}^{-3} \times 3.47 \times 10^4 \text{ m}^3/\text{sec}} &= 1.77 \times 10^6 \text{ sec to inhale 25 rem dose} \\
 &= 4.92 \text{ hrs.}
 \end{aligned}$$

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