Aroclor Vent loss to atmosphere

Sample calculation:

Assume a 20,000 gal tank being filled with 1242 @ 100°C. If tank is insulated, will quickly be filled with 1242 vapor saturated in air or N_2 @ 100°C.

Say vapor pressure @ 100°C is 0.3 torr.

$$\frac{20{,}000}{7.48} = 2680 \text{ ft}^3$$

$$\frac{2680 \text{ ft}^3}{359 \text{ SCF/mole}} \times \frac{273°K}{373°K} \times \frac{0.3 \text{ torr}}{760 \text{ torr}} \times 257 \frac{\text{lb}}{\text{mole}}.$$

$$= .555 \text{ lb}$$

Suppose temp is 150°C, V.P 2.0 torr

$$\frac{2680}{359} \times \frac{273}{423} \times \frac{2}{760} \times 257$$

DSW 296154

$$= 3.26 \text{ lb}$$

Worst case - no vents tied together, i.e. each lb Aroclor made displaces its own volume 5 times (filling S.T., filling can or drum, filling intermediate tankage.)

Department producing 4 M lbs/mo = 133,000 lb/day
= 13,000 gal/day

If all were 1242 and transfers were at 150°C:

$$3.26 \times 5 \times \frac{13}{20} = \underline{10.9 \text{ lb/day}}$$

Appears we must hold transfer and storage temperature as low as possible consistent with moisture and viscosity considerations.

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