Aroclor

c.c. C.B. Moore

DVNH/SS

16th June, 1967

Messrs. Titanine Ltd.,
Titanine Works,
Sheaveshill Avenue,
London N.W. 9.

For the Attention of Mr. Gillison

Dear Sirs,

With reference to our recent discussion over the telephone concerning the possible hazard in spraying aircraft with your acrylic lacquer, which contains our Aroclor 1242, I have made the following calculations from the data given to me.

Composition of Acrylic Resin Lacquer

25	parts Aroclor 1242
100	parts Acrylic Resin
say 50	parts Pigment
175	parts

Composition of Spray

Applied at 18% solids: assume Aroclor 1242 is not included in solids. Hence composition of spray is:-

3	parts Aroclor 1242
12	parts Acrylic resin } 18 parts
6	parts Pigment }
82	parts Thinners

Rate of Application

2 guns for 1½ hours each at 10 fluid oz./minute
i.e. total quantity applied = 1800 fluid ozs.

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Quantity of Aroclor 1242

At 5% the 1800 fluid ozs. contain 54 ozs. Aroclor 1242.
This is equivalent to 54 x 28,000mgrms = 1,652,000mgrm.

Hence if all the Aroclor 1242 is volatilised (and this is impossible) the volume of air necessary to dilute to 1 mgrm./m^3 i.e. the maximum permissible for continued breathing (8 hours per day on each and every day during working life!) is 1,652,000 m^3 or 58,320,000 cub. ft. during the spraying period of 1½ hours.

Dimensions of Hangar

If we take 150' x 150' x 40' as the minimum necessary to house the aircraft and provide reasonable working access we have a volume of 900,000 cub. ft., but the actual volume of your hangar is probably much greater.

Air Changes necessary to give 1 mgrm/m^3

$$\frac{58,320,000}{900,000} = 65 \text{ in } 1\tfrac{1}{2} \text{ hours}$$

44 changes/hour.

You can estimate by this approach, knowing the size of your hangar and the capacity of the ventilation system, the numbers of changes that would apply in your case, but as I have emphasised above, this is to give the safe working concentration for continued working. For occasional spraying periods, such as we have considered above, the concentration could go much higher for safety, but the workers may object to the smell at concentrations of 1 part/million of air or over.

So far we have considered the spray only from the Aroclor viewpoint, but, there is about 27 times as much thinners to be reckoned with, and these are not very pleasant things to breathe.

As regards the risk of inhaling Aroclor and solvent mists, I would think it desirable for those carrying out the spraying to use a nose and mouth respirator with a cannister suitable for absorbing organic vapours, or with a remote breathing tube connecting to the outer air, but the wearing of these may well raise the accident risk, and you must balance one against the other. Moreover, as you have had no trouble with sprays containing phosphoric acid, it is probably unlikely that liquid droplets of the acrylic spray are going

to cause much trouble.

Please write to me again if there are other points to be considered.

Yours faithfully,

D.V.N. HARDY

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