CONOCO

Interoffice Communication

To A. H. Sather

From J. V. Uptain ✓

Date May 1, 1978

Subject COMPOUND COLOR WEIGH ROOM AIR SAMPLING

Attached is a summary of the results of air sampling in the compound color weigh room. The sampling was done by Elbert Solomon and Jerald Uptain between January 31, 1978 and February 27, 1978. Sample analysis was done in our Ponca City Research Services Lab.

The sampling was done with a "Precision" high volume air sampler. Samples were collected on low ash, 8" x 10", cellulose filters, which were weighed before and after collection on a Metler balance. After final weighing, the filters were sent to the Ponca Lab for emission spectrophotometry analysis for heavy metals.

The sampling technique was to place the sampling device as close as possible to the Color Weigh Compounder during his routine color weighing and to take air samples for the duration of his task, which ranged from eight (8) minutes to sixty (60) minutes.

Since collection was not in the "breathing zone," the results should not be interpreted as strictly true exposures, but as area concentrations. However, based on the absence of air movement in the room, the difference is probably nil.

In the attached data summary, results are shown in three (3) ways:

1. TOTAL PARTICULATES

   This number represents the concentration of total solids in the air. It is obtained by dividing the total weight of material collected on the filter by the total volume of air pumped through the filter.

   The current particulate standard is 15,000 micrograms per cubic meter of air. Note that five (5) results were above the limit and that an additional three (3) were greater than one-half the limit The obvious conclusion is that ventilation in the room is inadequate.

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1. TOTAL PARTICULATES (Cont.)

It should also be noted that Mark 1314 (a very "dusty" barium/cadmium material) and antimony trioxide (also very "dusty") are poorly handled by the ventilation system.

Another interesting result seen was that the two instances of "non-dusting" leads (samples #4 and #12) gave high lead results

2. ELEMENTAL AIR CONCENTRATIONS

This number represents the concentration of heavy metals in the air. It is obtained by dividing the weight of each heavy metal quantified by emission spectrophotometry by the total volume of air pumped

Comparison of the results against standards (shown in the summary) shows that we have limit excursions with Antimony, Cadmium, and Lead. No excursions were seen with Barium, although two (2) results were high. Chromium, Copper (source unknown!), and Manganese appear to be no problem.

An interesting point to notice is that high Lead results were obtained in samples #2, #5, #7, #8, and #10 In each of these cases, lead was not being handled during the sampling! This seems to imply what has been previously stated, i.e. the recirculated room air is not being cleaned up!

3 EQUIVALENT EXPOSURES

This number represents the combined effect of heavy metal contaminants and is computed for each sample with a weighting formula:

$$Em = \frac{C_1}{L_1} + \frac{C_2}{L_2} + \ldots \frac{Cn}{Ln}$$

Where:

Em is the equivalent exposure for the mixture, C is the concentration of a particular heavy metal, L is for the exposure limit for that particular heavy metal.

It is normally accepted that Em is not to be allowed to exceed unity It does in all but two (2) cases.

The results clearly show that we have ample justification to proceed with ventilation improvements in the color weigh room. It is my understanding that this is intended and that the first attempt to do so will be to connect the weigh hood to the new "Compound Ventilation System " This should reduce exposures to a tolerable level. If it does not, money should be allocated for the 1979 Budget to solve the problem.

Jerald V. Uptain

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Attachment
c KWC, GGD, RGG, DEM, RBM, CRM, EDS, SJV