

August 23, 1944

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Major J. Keith Browning,
Heekin Can Company,
Park and Forest Avenue,
Norwood, Ohio.

Dear Major Browning:

I am attaching two copies of a report of a survey recently made of the Norwood plant of Heekin Can Company. For our own convenience of accounting, I am also enclosing a covering invoice. I believe that the report will be quite clear, but if any questions arise after you have had an opportunity to read it, please do not hesitate to call me.

Cordially yours,

Robert A. Kehoe, M. D.

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Enc.

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Report on

THE LEAD CONTAMINATION OF AIR
AT THE MEXLIN CAN COMPANY, TORONTO, ONTO

With Certain Recommendations

Inspection of the area in which the exposure to lead occurred showed that the general housekeeping had been improved and was fairly satisfactory. However, some spattered metal and oxide were seen on the floor near and under the can-making apparatus, where it could be picked up on the feet of workmen and distributed elsewhere. This should be cleaned up and kept cleaned up from day to day. The chief sources of lead exposure were provided with hoods and apparently adequate exhaust ventilation. It was noted that some fume escapes around the sides of the open hood over the solder baths. This could be corrected by a little extension of the apron downward or laterally, and if metal extension will interfere asbestos cloth could be used. This hood exhausts to the roof, while the "sweater" and "cooler" units of the body-wrapping machines were completely enclosed and were exhausted by a separate fan through a water scrubber. The scrubber was placed on a scaffold about 8 to 10 feet above the floor. Its outlet discharged directly into the work room. It was suspected that the exhausted air should be discharged outside the building and that the present arrangement would prove hazardous when operating in cooler weather with reduced ventilation. Tests were made to establish the facts.

The particular area tested was near a wall, the upper portion of which was made of steel and glass partitions with many windows which were all open. A large door at least 10 feet wide was also open and apparently there was a good deal of natural ventilation which would further tend to reduce the lead contamination.

Results

The localities tested and the analytical findings are indicated in the accompanying table.

It is apparent that the water scrubber does not remove lead effectively from the exhausted air. Apparently, when operating with all windows and doors open there is sufficient dilution to reduce the lead concentration below the maximum allowable concentration of 1.5 mg. per 10 cubic meters in certain parts of the plant. This appears not to be true, however, in the immediate vicinity of the "sweater" portions of the body-makers. The result listed for this area may not be characteristic since the sample was taken while an alteration was being made in the washer. (The exhaust fan was off for the first 10 minutes of the 15-minute test.) In any event, even with the scrubber in operation the lead content of the atmosphere near the "cooler" and "sweater" positions of the body-makers approaches the maximum allowable concentration, as can be seen from the result listed for 443-50 in the table.

Recommendations

1. The general plan for ventilating the body-maker machines seems satisfactory except that the air from the scrubber should be exhausted to the outside of the building.
2. The location of the exhaust should be so chosen that the discharged air does not re-enter the building. The fans would be more efficient if located on the ceiling so as to discharge outside directly.
3. The rate of air movement in the system used to ventilate the "cooler" and "sweater" ends of the body-machines should be at least 150-200 cfm. per square foot of area covered by the hoods.
4. The open hood over the solder bath should be extended downward or laterally or both so as to prevent the escape of fumes when

lateral air currents pass over the bath.

5. Metal and oxide that tend to collect on the equipment and on the floor near it should be cleaned up frequently (by vacuum equipment as far as possible) so as to prevent their dissemination.

6. Air samples should be taken again when the plant is operating under winter conditions and when the recommendations listed above have been fulfilled.

From the Kettering Laboratory of Applied Physiology,
College of Medicine, University of Cincinnati, Cincinnati, Ohio

Experimental work and observations by:

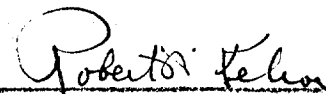
J. Cholak, Ch.E.

Waldo J. Younker, Ch.E., M.S.

Robert A. Kehoe, M.D.

Dated: August 21, 1944

Approved:



Robert A. Kehoe, Director

Analysis of electrolytic precipitator samples

<u>analysis Number</u>	<u>Location and Description</u>	<u>Volume (liters)</u>
44C-49	Taken 2 feet from exhaust of water scrubber used in exhausting body making machines.	1225
44C-50	Between #2 and #3 body makers at the "cooler" ends.	1241
44C-51	Between #2 and #3 seaters. About 25 feet from body making machines.	1240
44C-52	Between #2 and #3 body makers at the "sweater" position.	1225
44C-53	Area before ladies' washroom. Precipitator tube pointed toward air washer about 50 feet away and also 30 feet from #7 body maker, which was operating "open."	1241
44C-54	Between #2 and #3 testers, 75-100 feet from #2 and #3 body makers about 25 feet from large open door.	1262
44C-55	Between #2 and #3 body makers at feeder ends, but precipitator tube pointed toward #2.	1230

Note: Rate of sampling 3 cfs. for 15 minutes. All volume

Collected at the Heekin Can Company

<u>Mg. Pb</u> <u>Found</u>	<u>Mg. Pb</u> <u>per 10 m³</u>	<u>Remarks</u>
6.53	53.2	All baffles of water scrubber in.
0.17	1.37	Taken at same time as #44C-49.
0.112	0.90	and baffles of washer removed. Exhaust not operating for first 10 minutes.
0.51	4.17	Taken at same time as #44C-51.
0.07	0.56	baffles same as #44C-51.
0.041	0.32	Taken at same time as #44C-53.
0.055	0.45	Baffles same as #44C-51.

as corrected to 25°C.