

Suggestions for the Improvement of Conditions
in
Delco-Remy Storage Battery Factory

GENERAL RECOMMENDATIONS -

1. The complete separation of various departments of the operation is advantageous, because there is considerable variation in the magnitude of exposure occasioned by various types of work and it is desirable to isolate the types of exposure so far as possible in order to appreciate their magnitude, and in order that no unnecessary exposure be brought about. In this way the doctor can localize the hazards of a particular occupation by the condition of the men so engaged. It is also desirable to have certain occupational fields which have no intrinsic hazard, into which to transfer workmen who have been suffering significant exposure.
2. The hazards of any particular occupation should be studied and combatted by all possible means, so as to come within the limits of known satisfactory conditions. The best manner of determining the latter in this case is to measure the dust concentration in the air breathed, and to be satisfied with the results only when the air breathed by workmen contains less than 5 mg. of lead per 10 cubic meters of air.
3. Methods of combatting the dust hazards are best summarized as follows:
 - (a) Where there is dust on the floor from any cause the floor should be kept continually wet.
 - (b) Where there is dust thrown into the air in any operation, a suitable forced ventilation should so dilute the air breathed as to reduce the lead dust to the above concentration. Hoods and fans can accomplish this. They work best if the air current is pulled laterally or downward, rather than upward.
4. The above applies with equal force to volatile lead from melting pots, lead burning, etc.
5. Insistent instructions and supervision as to cleanliness of workmen, with especial care as to nails, hands and teeth, is absolutely necessary to prevent careless ingestion of lead. Nail and tooth brushes should be supplied for this purpose.

General Recommendations (cont.)

6. Thorough inspection of respirators and other protective equipment, as well as of the carefulness of the men themselves should be inaugurated unless already in existence.
7. The use of respirators is necessary as long as there are dust concentrations in excess of the figures given above. (I am sending herewith a booklet describing various types of such masks. Please return it when you have finished with it. I am also obtaining a sample mask which I will show you when I obtain it from a man I know in England.)

SPECIFIC CRITICISMS

1. Reclamation Department.

- (a) There is too much dust at the opening at which materials are put into the melting pot. This could be hooded, or materials might be put in mechanically.
- (b) There is oxide dust in dressing the melting pot. This should be hooded. It would probably be well to use a metal truck in which to put the dross, and to have a hood over this at the time dross is being shoveled or dipped into it.
- (c) There is considerable dust at the grinding apparatus. The materials give off dust as introduced (shoveled) and the grinding apparatus leaks.
- (d) There is a considerable amount of dust on the floor. This should be prevented, as water is dangerous in the area of the melting pot.
- (e) The lead pig moulds should be hooded to remove the lead vapor.

2. Mixing Department.

The emptying of barrels of oxide and other materials gives rise to dust. The barrels might best be emptied by means of a mechanical device that upends them into an orifice exactly fitted to the barrel top, so no leakage is possible. If some amount of oxide gets on the floor, the floor should be kept wet, otherwise currents of air will carry it into respired air of workmen.

3. Pasting Department.

The mechanical pasting machines allow paste to set

on the floor where it may dry. Also on various parts of the machinery it may dry. It should be seen that the floor and apparatus are sufficiently moist to prevent dust being thrown into the air.

4. Sorting and Plate Assembling.

The grating with down draft on which these are handled is very good. However some dust rises from these gratings. They should be hooded so as to have some side draft in order to keep the dust out of the air breathed by workmen. This is shown in part by the dust on the floor in this area.

The same is true of the rotary brushes which clean these plates. They are not properly hooded. Dust passes out of the hood in front and at the sides.

5. Assembling Department.

(a) There is more dust on the floor and on the moving assembly platform than is necessary. This would be prevented in part by a partition separating this department from the pasting and sorting space. It should be possible to lessen the dust on the moving platform by cleaning the plates more adequately.

(b) There is no precaution against lead vapor in the case of the lead burners in the assembling work. This operation should be hooded so as to reduce the quantity of vapor breathed.