

trations of lead dust. Filing, however, is not productive of small particles and is preferred over the use of power-driven tools.

If filing is not practicable, it will be necessary to provide some type of mechanical ventilation system for the solder removal operations involving the use of power tools. Since the permissible limit generally accepted for lead is 1.5 milligrams per 10 cubic meters of air (353 cubic feet) it will be necessary to have an effective system to provide adequate control. Engineers experienced in designing ven-

tilation systems to control toxic materials should be consulted, otherwise a costly system might be erected and later found entirely ineffective.

Frequently solder removal operations require the use of portable tools on large objects and a local exhaust system would not be effective, as is the case in the fabrication of automobile bodies. General contamination of the factory with lead dust has been eliminated by enclosing the entire operation in a large booth and exhausting a sufficient quantity of air from the enclosure to insure a constant in-

ward flow of air from the factory into the booth. Under these circumstances no practical amount of air could be removed from the booth to reduce the lead concentration to a safe level, and therefore it is necessary that the men working therein be provided with adequate personal protective devices.

Heat Treating

High temperatures are a frequent source of complaint from employees in heat treat departments but such conditions and their control are not within the subject under discussion.

Fumes from cyanide pots are often associated with cyanides used as fumigants or as the lethal agent in death chambers, and supervision as well as the employee becomes apprehensive. Fumes from such a source are irritating and because of this property should be adequately ventilated. The irritant nature of the fume is caused by alkali formed upon decomposition of the cyanide.

Molten lead is sometimes used as a hardening medium for metals. Frequently charcoal or some similar material is placed on the surface of the metal to conserve heat and prevent



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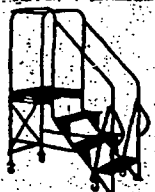
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oxidation. A covering of this type reduces the volatilization of lead while the bath is quiescent, but has no effect while the bath is in use. Adequate ventilation should therefore be provided for baths of this type. As complete an enclosure as is practical for the operation being performed is advisable with air quantities dependent upon the open areas in the hood. To prevent contamination resulting from volatilization of lead accumulating in the combustion chambers the products of combustion from gas fired lead pots should be vented to the outdoors and not be allowed to dissipate into the workroom.

Asbestos

Asbestos used in the formulation of brake lining is a potentially harmful compound. This material is the offending agent in the production of the lung ailment known as asbestosis. The harmful effect is comparable to that of silica and a permissible limit of 5,000,000 particles of asbestos dust per cubic foot of air is generally recognized.

Dust exposures to asbestos and other ingredients of the brake lining exist when the dry materials are handled and emptied into the mixers and in the subsequent operations of slitting, grinding, or surfacing. Compounds of lead are sometimes used in brake linings, and contamination from this source should not be ignored. Local exhaust systems with properly designed hoods or enclosures are used to remove the dust from these operations.

Iron Foundries

The principal ingredients of foundry dusts are silica, sea coal, clays, and parting compounds. The predominant material will be dependent upon which phase of the foundry operation is being performed. The control of dust is the major problem, whereas fume is of secondary importance.

A discussion of all the aspects of the industrial hygiene problems in such plants would require a separate treatise. For the present discussion it should be sufficient to state that all obvious sources of dust dispersion should be reduced to a minimum by adequate localized exhaust systems. In a mechanized foundry such places would be sand conditioning and mixing equipment, tumbling mills, shake-out, core removal and knockout sta-

tions, transfer points of dry sand, abrasive blasting operations, and all grinding operations performed on castings containing appreciable quantities of sand.

Maintenance of ventilation equipment is a major item in foundries because of the abrasive action of the dust. It is imperative that a good program be maintained so as to keep the equipment functioning at maximum efficiency.

Because of the heat associated with large scale foundry activities it is a common sight to see pedestal fans or

air cooling ducts directed in such a manner as to create cross drafts which interfere with the efficient removal of dust. Better placement of these fans or ducts will go far in reducing dust concentrations in the areas where they are used.

Respiratory Protective Devices

After the obvious has been corrected, it is advisable that a survey of the foundry be made by an industrial hygienist so that an accurate evaluation of the exposure may be obtained.

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