

PREVENTION OF LEAD POISONING.

To all Underground and Surface Workmen.

[LID 9723]

[Factsheet for Broken Hill Lead Miners, pages 27-28 from the *1892-3 Report of the Board Appointed to Inquire into the Prevalence & Prevention of Lead Poisoning at the BROKEN HILL SILVER-LEAD MINES, to the Honorable the Minister for Mines and Agriculture, Ordered by the NSW [New South Wales, Australia] Legislative Assembly to be Printed 25 May, 1893]*

[Note added 15 October 2008 by Elizabeth O'Brien, Manager, Global Lead Advice and Support Service (GLASS). The LEAD Group is web-publishing this factsheet, despite it having been written over a century ago, because:

- there are so few factsheets for lead miners in the world today,
- it contains some incredible insights, for instance the advice that some workers will absorb more lead than others despite precautions taken, and therefore should find another occupation; and the statement: "*Men who drink* are in special danger of getting leaded, and are sure to suffer seriously"
- states correct information about skin absorption of lead, whereas other government websites around the world still wrongly state that lead is not absorbed through the skin,
- only contains a couple of things which would not be recommended today, including:
 1. Daily intake of a pint or more of milk. Currently, it IS recommended that lead-exposed people should increase their calcium intake via yoghurt and cheese etc, but apparently, a large intake of milk fills the gut leaving the person less likely to seek out a balanced diet to obtain the Vitamin C, zinc and iron which they also require to reduce their rate of lead absorption.
 2. Smoking at work as long as the hands are clean and the tobacco was prepared at home. To my knowledge, every blood lead survey which noted whether the subjects were smokers or passive smokers, has found that people exposed to cigarette smoke (including children) always have a statistically significant higher blood lead level than people not exposed to cigarette smoke. The Manager of the secondary lead smelter in Sydney told me in 1994 that before they banned smoking at work, smokers typically had twice the blood lead level of non-smokers on the staff. I guess it's possible that in 1893, tobacco itself was not lead contaminated (eg tobacco crops were possibly not sprayed with lead arsenate pesticide or were not subject to lead air pollution fall out or otherwise lead contaminated soil). However even if the tobacco was not lead contaminated, it is now thought that smoking indirectly causes increased lead inhalation and greater lead absorption. Current theories include that once the tobacco is lit, the temperature is sufficient to turn any nearby lead dust particles into lead fumes which are then inhaled with the tobacco smoke. Further, tobacco smoke may interfere with Vitamin C functioning, thus increasing the absorption of lead. Thus, even before smoking at work was generally banned in Australia, some lead workplaces had banned smoking at work in order to reduce blood lead levels of workers.

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Lead gets into the system in the shape of ore-dust, flue-dust, and smoke formed in the course of smelting, by way of the stomach, lungs and skin.

The way to avoid leading is to guard the stomach, lungs and skin as closely as possible; to follow such habits of life that any lead which does enter nevertheless shall be rendered comparatively harmless by nature acting within the body; and to take care that no accumulation of lead particles shall take place in the bowels.

Lead gets into the stomach with the food swallowed, and it gets to the food from dusty or dirty hands as well as from the air; it gets into drink either by dust falling into it or by the drinking-vessel being so carelessly kept that it becomes dusty; it can also reach the stomach from dusty air, which deposits it on the throat, whence it is swallowed.

Therefore:

- Food should be carefully protected from dust;
- Water should be kept in securely covered vessels;
- Pannikins, etc, should be so kept that they cannot get dusty, especially on the *outside*;
- The mouth should be rinsed out before drinking or eating;
- Hands should be washed before eating.

Lead gets into the lungs from dusty air breathed in when ore or flue-dust is being handled, and from dusty working clothes which shake lead into the air by movements of the body; as vapour (or smoke) from the smelters, molten bullion, and slag, etc.; and as vapour with tobacco smoke, when tobacco is cut with dirty hands, so that portions of lead or ore are put into the pipe, where they are turned to smoke by the heat and breathed in.

Therefore:

- Dust should be prevented both underground and at the surface by regular sprinkling, &c., as much as possible;
- Moustachios should be worn to protect the lips from falling dust;
- The vapour and smoke from smelters should not be breathed for a moment when it can be avoided by moving to windward;
- Tobacco should be cut with clean hands *before going to work*.

Lead gets to the skin as dust, and if allowed to remain upon it long lead works through the skin into the system. Therefore:

- Working clothes should be kept in the changing-rooms, and put on before beginning work;
- A bath or shower to cleanse hair and skin should be taken after work and before putting on home-clothes again.

Milk is an excellent preventive, but it must be suitably taken. A pint a day is probably enough – more will do no harm. It should be taken twice: one time must be immediately or *very shortly before beginning work*, not in the course of work; the other time may be chosen – after getting home from work would do well.

Never begin work with an empty stomach, nor more than two hours after a meal.

Wash hands and rinse the mouth before eating; rinse the mouth before drinking; keep the teeth well brushed and clean.

Bathe every day if possible; do not bathe less than twice a week.

Regulate the bowels in the following way: use Epsom salts for the purpose and take as much every day as will cause a single action of the bowels every day. That is a much more useful plan for the present purpose than the custom now generally followed of taking a large dose of salts once a week or once a fortnight. Each must find out for himself the proper quantity he requires to produce this regular and daily action; but the following is a good way to make the medicine, and more or less of it should be taken daily as may be found necessary.

Epsom salts	...	...	...	...	2 ounces.
Water	...	...	...	...	A wine-bottle full.
Red pepper	...	...	...	...	As much as is agreeable.

Take a wine-glass full (or more or less as may be necessary to cause a single action of the bowels) in a tumbler of water, on getting up after sleeping, once every day.

Notice. – There are a few people who throw the lead off and who are not seriously affected by it. There are other people who cannot throw it off at all, but feel ill, or actually fall ill, almost as soon as they begin work in it. This difference has nothing to do with bodily strength, but is a personal peculiarity. *It is therefore of no use to persevere against leading.* Persons who suffer soon, however slightly, should leave their work with lead without delay, and seek some other kind of labour. For example: If a man gets colic within a few weeks of taking up his employment, or if he gets colic twice in the first six months, or three times in the first year, he should give up. His constitution will not stand it, and if he keeps on he will probably suffer badly, and permanently, or even fatally.

Men who drink are in special danger of getting leaded, and are sure to suffer seriously.

We beg leave, in conclusion, to express the opinion that this matter of lead-poisoning is of far-reaching importance and urgently requires attention in the general public interest.

We have the honour to be,
Sir,
Your most obedient Servants,
J. ASHBURTON THOMPSON,
Chairman.
WILLIAM M. HAMLET.
JOSIAH THOMAS.

[END OF 1893 FACTSHEET]

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