



DEFENCE HEALTH SERVICE BRANCH

Just the Facts...

Lead (Inorganic)

LEAD IS USED IN MANY COMMERCIAL AND INDUSTRIAL PRODUCTS. IT IS NOT NEEDED IN HUMANS, AND IT CAN BE HARMFUL IF EXCESSIVE AMOUNTS ARE TAKEN INTO THE BODY.

GENERAL INFORMATION	Lead has been used for many commercial and industrial purposes. Although the use has become more limited over the past two decades, even in Australia it remains in many products and is present as an environmental contaminant. Lead may still be commonly used overseas with product and environmental contamination levels of lead being much higher than in Australia. Lead has no biological function in the body, and it may be harmful if excessive amounts are taken into the body.
ROUTINE USES IN THE DEPLOYED SETTING	This fact sheet deals with inorganic lead. Inorganic lead is found in storage batteries, bullets, munitions primers, soft metal alloys (solder), lubricants, structural paints (especially marine and bridge applications, but also older residential paints); cable and wire insulation covering, plumbing, and solder.
PERSONAL PROTECTIVE EQUIPMENT (PPE) and COUNTERMEASURES AVAILABLE FOR DEPLOYED PERSONNEL	If you regularly work with lead, you may have been provided with a fitted respirator. Additionally, proper gloves and hand washing after the use of lead-containing products or dust prevents entry of lead through the mouth. Cigarette smoking may increase your absorption of lead dust. It is important that your medical provider know if you did or did not use PPE or other lead exposure countermeasures when you were exposed to dust that may have contained lead.
EXPOSURE LEVELS HISTORICALLY ENCOUNTERED	In the workplace setting, those who work with lead regularly are checked and their workplace is also checked to make sure that lead exposure levels are not high. In most settings, the levels are not high enough to require control measures to reduce exposure.
AVAILABLE EXPOSURE DATA	Be sure to tell your medical officer if air or dust samples were collected in your work area or environment, or if you worked, had activities, or slept in dusty areas where lead exposure was possible—such as a former industrial shop, waste disposal site, or current lead working operation.

<p align="center">SIGNS AND SYMPTOMS OF ACUTE AND CHRONIC EXPOSURE</p>	<p>Australian Defence Force personnel are very unlikely to encounter operations which could expose them to significant amounts of inorganic lead. However, early signs and symptoms following excessive lead exposure are very general and may not be associated with lead by either you or your medical officer. Many of these symptoms can be caused by many other things and even if you have some of these symptoms, they may not be due to lead. If your medical officer believes it is clinically indicated, your blood can be checked for lead to help determine this.</p> <ul style="list-style-type: none"> - Exposure to a high lead level for a short period of time is rare. In these instances, the following may occur: metal-taste in mouth, frequent or continuous stomach aches, nausea, abdominal cramps, muscle pain or weakness. - Exposure to a moderate lead level for a long period of time may cause changes in personality, memory, learning, motor skills, frequent stomach aches (lead colic), joint and muscle pain, and weakness - There may also be a "lead-line" visible in the mouth. <p>Laboratory tests (bioassays) can detect excessive lead absorption and early reversible effects even before signs and symptoms appear.</p>
<p align="center">REVERSIBILITY OF ACUTE AND CHRONIC HEALTH EFFECTS</p>	<p>In most adult cases involving excessive work or environmental exposures to lead, the signs and symptoms disappear when the excessive lead is eliminated from the body. Severe acute and chronic poisonings may result in permanent effects. The use of blood tests to detect early elevation in blood lead levels or zinc protoporphyrin level can avoid serious medical conditions.</p>
<p align="center">TREATMENT REQUIRED/AVAILABLE FOR EXPOSURE</p>	<p>If your blood lead level has become elevated over time and your general health is good, the best medical treatment is to stop the lead exposure and allow your body to eliminate the lead. If needed, a drug (chelating agent) can be used to increase the rate of removal, but this method of treatment is usually reserved for acute poisonings or very high levels</p>
<p align="center">LONG TERM MEDICAL SURVEILLANCE REQUIREMENTS OF HEALTH EFFECTS MONITORING</p>	<p>Bioassays for lead include the measurement of lead in your blood [BPb] and the presence of a chemical, zinc protoporphyrin [ZPP], which also increases when lead is chronically present in concentrations above 25 ug/dL. The blood lead level reflects only the presence of lead, but there are many medical conditions, other than exposure to lead, that can cause the [ZPP] to increase.</p>
<p align="center">SPECIAL RISK COMMUNICATION INFORMATION</p>	<p>Even if you are exposed to lead through elevated environmental or occupational levels, the lead level in your body may not become medically significant. There are many barriers to entry of lead into the body; your body can also store and eliminate absorbed lead. The blood lead level [BPb] measures the uptake of lead, and the zinc protoporphyrin level [ZPP] measures an effect that MAY BE caused by lead. The presence of normal clinical findings, a [BPb] below 30 ug/dL, and a [ZPP] below 50 ug/dL, demonstrate that significant harmful effects have not occurred.</p>

Note: This ADF Fact Sheet was developed by the Directorate of Preventive Health, DHSB with the cooperation of the U.S. Army Center for Health Promotion and Preventive Medicine. Please email all comments and questions to: DPH.DHS@defence.gov.au