

**GLASS provides information & referrals on lead poisoning & lead contamination prevention & management, with the goal of eliminating lead poisoning globally & protecting the environment from lead.  
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## **Model National Public Health Policy on the Prevention of Lead Poisoning**

An outline proposal

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### **Introduction**

This outline policy is aimed at the Health Ministers of national governments.

The proposals for policy are numbered and in bold type.

#### **0.1 Determine and allocate responsibility for prevention of lead poisoning**

Prevention of lead poisoning is commonly divided, in health literature, as consisting of Primary, Secondary and Tertiary Prevention.

Primary Prevention is the responsibility of national governments, and possibly international government bodies, in some cases. It is concerned with preventing lead poisoning occurring in the first place.

Secondary Prevention is more diversified, in that it is not necessarily possible to designate, in advance, whose responsibility it is. Secondary Prevention is concerned with individuals, and is about removing the individual from the source of lead exposure, or removing the source from the individual. A typical example of the former would be a person changing their occupation or place of residence in order to stop being exposed to lead. An example of the latter would be removal of lead contaminated soil, from a backyard.

Tertiary Prevention is concerned with preventing the lead already in a person's body from doing further harm. Responsibility for this is also diversified, from the individual seeking to counter the effects of lead poisoning through diet or treatment, to governments sponsoring long-term studies of the effects of certain treatment protocols.

*There must be strategies for carrying out or encouraging all three forms of prevention. These strategies need to be tailored to the specific circumstances of the particular country, but public awareness campaigns as to the health effects of lead, possible sources of exposure, and what can be done, are essential.*

#### **0.2 Carry out a national survey of blood lead levels within 6 months of Health Minister endorsing the Prevention of Lead Poisoning Policy**

The first step in implementing a national policy for preventing lead poisoning in a population is to do a national blood lead level survey of all ages. It is not a question of doing a survey to find out if anyone in the population of a particular country has lead in their blood. Exposure to lead in some form or another is genuinely universal. Hence, for the well-being of its population, every country needs a health policy for the prevention of lead poisoning. A national blood lead level survey is needed in order to develop specific strategies.

*A national blood lead level survey should also include testing for levels of iron, zinc and iodine, as these "nutritional" elements have a connection with lead and its effects: low levels of iron and zinc in the blood increase the rate of uptake of lead, and iron and iodine deficiency can be mistaken for one of the effects of lead poisoning - problems with brain development.*

### **Steps in Primary Prevention of Lead Poisoning**

#### **1.1 Use the results of the national blood lead level survey to identify persons/groups at risk of elevated blood lead levels**

#### **1.2 Identify sources and pathways by which lead poisoning has occurred**

A national blood lead level survey will identify individuals with elevated blood lead levels. Analysis of the results will identify who, in general, is at risk of high blood lead levels. Risk factors include age, where the person lives, their sex, occupation and place of work or where they go to school, behaviour and leisure activity (e.g. fishing, shooting), certain food or water sources, and frequent contact with specific consumer

products. The survey will help identify sources and pathways by which lead poisoning has occurred. "Isotopic fingerprinting" - an expensive process - should be used to identify the mine source of lead (and thus indicate the sources and pathways) in those with elevated blood lead levels.

It is important to note that sources and pathways are not the same for every country, so the results of one country's national survey cannot be applied automatically to another country. For example, paint and petrol have been identified as the major source of lead poisoning of children and adults respectively in the United States whereas a national survey may reveal that air pollution and use of human sewage as fertiliser on food crops are the major sources of lead poisoning of all ages in any country with such practices.

### **1.3 Set a national goal, to be reviewed within a definite time frame, applicable to everyone, including workers, for reduction of blood lead levels**

At this point it is necessary to define the goal, above which a blood lead level is considered to be "elevated" and below which a blood lead level is considered to be "acceptable." What is considered to be an elevated blood lead level is NOT fixed. Initially, 80 µg/dL was the "acceptable level" and was progressively reduced (to 60, 50, 40 and then 25 µg/dL) in the light of research revealing connections between blood lead levels and serious health risks. Currently, the widely used goal is a blood lead level no greater than 10 micrograms of lead per decilitre of blood (10 µg/dL), based on mainly US research, prior to 1991. As a result of research carried out since 1991, many researchers now recommend no greater than 2 micrograms per decilitre of blood as the goal.

*Because research into the health effects of lead has demonstrated over many decades that the "acceptable" level will always need to be lowered further on the basis of health effects, it is vital to **acknowledge** that the blood lead level goal set by any government will be chosen on political and economic grounds. On health grounds alone, the **ONLY** safe level of lead is zero and zero should be the final goal.*

It is a political absurdity to set the level very low in a country which has no hope of achieving it, especially if it still permits the use of leaded petrol for on-road vehicles, and tragically irresponsible to set the level very high.

### **1.4 Determine staged reduction of target levels**

A target is a blood lead level to be achieved by the entire population by a certain date. The final target in a policy will be the goal level.

Each country's government will have to decide on what is politically and economically viable, but stepped targets will enable the development of specific strategies so that the goal can be achieved over a set timeframe.

Consider political and economic factors in order to determine staged reduction of the target levels, for example:

- 10 µg/dL by 2012,
- 5 µg/dL by 2015, and
- 2 µg/dL by 2018.

Any province, state or other level of government (which for instance is dependent on the income of a large lead facility) within the country, can set its own target levels, as long as the economic and political factors for choosing the targets are **acknowledged**.

### **1.5 Define success in achieving a particular target as being no incidence of blood lead level exceeding the target level by the target date, as revealed by follow-up national surveys**

By setting a target, a country has something by which to measure its progress in reducing the incidence of lead poisoning in its population, but actually measurement is vital for re-evaluating the strategies needed to meet the targets.

### **1.6 Having identified persons/groups at risk, and sources and pathways by which lead poisoning has occurred, introduce regulations to prevent poisoning occurring in the first place, so that each target can be met**

This is Primary Prevention, such as banning or limiting the use of lead in certain products, and reducing exposure to lead in certain processes or activities, and is the responsibility of national governments, but may, by international treaty, become an international issue. An example is countries wanting to join the European Union have been required to phase out leaded petrol for on-road vehicles.

Lead, however, is found in many other products and by-products, including, for example, leaded paint and ammunition. Primary prevention policies should include requiring the removal of leaded paint that is already on surfaces in all government-controlled facilities for children, as well as restricting lead in newly produced or imported coatings or painted products. It is the responsibility of national governments (or international) to ban or reduce the use of lead in paint used for certain purposes, and national or state government to require the addition of health warnings on tools which are available for general purchase in hardware stores, such as sanders and heat guns, as to the need to test for lead or safe temperatures for removal of paint containing lead.

Each country's government will have to decide what reduced level of lead in the product or process is necessary to achieve the blood lead level target it has set. This will need a re-think of ways of doing things, including by people actually involved in producing the product or carrying out the process. It will not necessarily require hi-tech research. *Industry will always claim it is too expensive to make any changes. This may or may not be an impediment to change, depending on the nature of the country's system of government. Autocratic governments will have less difficulty in imposing standards, but, unfortunately, may have less incentive to do so, if concern for their people's welfare is not high.*

### **1.7 Set standards for the certification of tradespeople involved in the removal of lead hazards**

It is the responsibility of government to determine standards for the certification of persons trained in the safe removal of contaminated ceiling dust, paint containing lead, or lead contaminated soil, etc.

### **1.8 Develop strategies to increase public awareness of the dangers of lead and inform relevant professionals of appropriate prevention actions**

### **1.9 Do follow-up national surveys to see if the target was met and to motivate and inform increased development or implementation of strategies to achieve the next target**

#### **Steps in Secondary Prevention**

Responsibility for secondary prevention is broad - it includes anyone who might suggest a blood lead test for an individual eg the teacher who notices behaviour associated (not necessarily exclusively) with high blood lead levels, such as delinquency, or learning difficulties, as well as doctors who see patients complaining of certain symptoms or exhibiting certain behaviour, and parents. Government's role at any level (national, state, local) consists of creating appropriate legislation for intervention to prevent further lead poisoning in individuals, and raising awareness through information programs.

### **2.1 Identify persons at risk, using known risk factors, and set intervention levels to prevent further poisoning. The intervention blood lead level should be identical with the country's current target blood lead level and should apply universally, including for workers**

The intervention blood lead level is the level at which the government will intervene, or create regulations which require others (eg employers, or state or provincial agencies) to intervene, to bring down an individual's blood lead level.

Secondary prevention deals with people at an individual level. It is about identifying - from either a national blood lead level survey, or other blood lead level research, groups of persons likely to be at risk of elevated blood lead levels, and encouraging individuals who fit into such groups to have a blood lead level test. It also includes awareness that a person's behaviour or symptoms may be linked to a high blood lead level, and identifying what, in the individual's environment, is the probable source of the person's exposure to lead.

Having determined that the person has an elevated blood lead level, secondary prevention is about preventing further exposure, by either removing the source of the lead from the person's environment, or removing the person from contact with the source of the lead, and by nutritional intervention designed to decrease the rate of absorption of any lead encountered in future.

The information (in educational materials) given by a health department or given by a health professional in an effort to determine or test for lead sources in the individual's environment needs to be specific to the country and indeed the region as local sources such as mines, smelters and manufacturing or recycling plants or incinerators can impact hugely on case management.

Any adult, including workers, with a blood lead level above the national target level should be eligible for source and pathway identification and nutritional and other interventions on the hierarchy of control of occupational exposures, in order to prevent further poisoning. Looking at the recent research into health effects, there is no longer any justification for accepting a higher blood lead level in an adult than in a child.

## 2.2 Re-educate employers and health professionals as to new intervention levels

*It is important to **acknowledge** that, if, in current regulations, a certain class of people such as workers are permitted to exceed the target blood lead level, that this was a political and economic decision made in the past, not a health-based decision. The decision to not include adults in public health policy on lead poisoning prevention was a common mistake of past programs based on inadequate information about health effects. Many employers and health professionals will need to be re-educated if they've always been told that 50 or 80 or 120 µg/dL is the appropriate intervention level for workers or that an elevated blood lead level is only of concern in a young child.*

## 2.3 Ensure ongoing blood lead monitoring in at-risk groups

For example, ensure regular inspections of works being carried out by certified lead abatement personnel and other lead workers including regular blood lead assessment. Blood lead tests should be requested (including for children) whenever a person is about to renovate leaded paint or demolish any part of an old building, and again, after the work has been completed, in order to determine that no further clean-up is required.

Lead workers and hobbyists such as leadlighters, ceramicists, ammunition-makers, sinker-makers, shooters, jewellers etc should be regularly informed of the need for blood lead monitoring and the available assistance should they return an elevated blood lead level. Any child who presents with pica, possible autism or learning or development problems should be referred for blood lead and iron testing. All blood lead results above the target level should be followed up until re-testing determines that the blood lead level has fallen below the target.

### Steps in Tertiary Prevention

This is concerned with preventing the lead which is already in a person's body from causing further harm.

#### 3.1 Carry out further research to discover if there are links between elevated blood lead levels at any age and the development of certain adverse health effects in later life

For example, it is possible that development of schizophrenia, depression and Alzheimer's disease are linked to exposure to lead either in the womb or later in life. Discovery of such links would be a step in reducing or eliminating a source of great suffering and misery. Such research would require government or philanthropic funding and could be followed by the next step.

#### 3.2 Carry out or request the carrying out of research to test whether certain intervention protocols succeed in reducing the risk of development of associated adverse health effects

Longitudinal controlled studies are needed to determine whether, once further poisoning has been prevented by source identification and removal, a particular combination of nutritional intervention and chelation therapy or other treatment, will avert anticipated adverse health outcomes. Research is needed on whether treatment or other interventions prevent any of the associated adverse effects that are linked with lead, including: infertility, sub-optimal foetal and childhood development, later schizophrenia, Alzheimer's, and hypertension (causing stroke or heart attack), in later life, of persons with an elevated blood lead level. For example, a longitudinal controlled study could determine whether infertile couples or couples with known elevated blood lead levels who undergo one of a variety of combinations of nutritional intervention and treatment, increase their chances of conceiving or improve the birth outcomes, compared to controls who receive no treatment.

*A country that is unable to do its own research, should request such research be carried out by the World Health Organisation or funded by philanthropic organisations or other countries.*

#### 3.3 Require independent research of detox claims and constantly inform health professionals and the public of research findings

It is natural and logical to think, once you realise that the era of leaded petrol has exposed everyone to lead or you specifically discover that you have an elevated blood lead level, that there must be something that can be done to remove lead from the body, and that by doing so, you can reduce your chances of suffering the health effects of lead. The manufacturers of any treatment which claims to detox the body by any means (eg sauna, foot pads, supplements, exercise plus liquid-only diets, liver cleanse, colloidal silver, Epsom salts, zeolite, mega-dose vitamin C or other chelating agents) should be required by government to fund independent research into the veracity of their detox claims. It is only when health professionals and the public are constantly informed of the results of such research that they can adequately manage the lead already in patients, in a way that minimises the future adverse health effects and does no harm, while utilising tertiary prevention methods that have been proven to work.