

<<NOTE TO USER: Please add details of the date, time, place and sponsorship of the meeting for which you are using this presentation in the space indicated.>>

<<NOTE TO USER: This is a large set of slides from which the presenter should select the most relevant ones to use in a specific presentation. These slides cover many facets of the problem. Present only those slides that apply most directly to the local situation in the region.>>

This presentation will deal with the epidemiology, sources, routes of exposure, clinical manifestations, laboratory aspects and basic approach for prevention and management of poisoning due to lead exposure in children, an important problem affecting children's health and development worldwide.



After reviewing this training module, the individual will understand, recognize, and know:

<<READ SLIDE.>>



•Exposure to lead and subsequent lead poisoning has been recognized from ancient times, but reached epidemic proportions during the twentieth century, due to the progressive increase in the production and use of lead.

•Susceptibility to lead poisoning is particularly high among young children due to increased exposure and absorption and their special vulnerability.

•Lead impairs several organ systems, but the main concern is CNS damage, particularly in young infants who are exposed to lead during the critical periods of brain development.

•The manifestations of lead poisoning are nonspecific, and the vast majority of children may be asymptomatic and diagnosed only by routine screening of blood lead levels (BLL).

•Research done during the 1970s and 1980s, mainly in the USA, revealed that the effect of lead on the central nervous system (CNS) in children occurs at lead levels which were previously considered "safe". Thus, there was a gradual decrease in the BLL that require further follow-up and intervention (the so-called: "action level").

•The epidemic proportions of childhood lead poisoning pose a challenge to health authorities, and have triggered a major worldwide public health campaign.

•Most victims of lead poisoning are children with low socioeconomic status, such as children living in slums.

## <<NOTE TO USERS: Insert an overview of the prevalence of lead poisoning in your region/location here, if possible.>>

•A multi-level strategy of prevention, elimination of the sources of exposure, public health education, national screening programmes, regulations, chelation therapy and

comprehensive, long-term follow-up, is required to eliminate this serious environmental health problem.

*Ref:* •Nriagu JO. A history of global metal pollution. *Science*, 1996, 272:223.



The deposition of lead in Greenland ice (microgram/kg) has increased sharply since 1940; this is attributed mainly to the combustion of lead alkyl additives in petrol.



In developing countries as much as 15-20% mental retardation could be caused by exposure to lead. The burden of disease is often underestimated by policymakers.

Ref:

•Prüss-Üstün A et al. Lead exposure. In: Ezzati eds. *Comparative quantification of health risks.* Geneva, World Health Organization, 2004.

•Fewtrell L et al. Lead: Assessing the environmental burden of disease at national and local levels. WHO, 2003.

## <<READ SLIDE.>>



Not only is lead poisoning a tragedy for the child affected and his/her family, but it also carries a significant societal and economic cost. These cost estimates are from the USA. **<<READ SLIDE.>>** 

Ref:

•Landrigan P et al. Environmental pollutants and disease in American children: estimates of morbidity, mortality, and costs for lead poisoning, asthma, cancer, and developmental disabilities. *Environ Health Perspect*, 2002, 110:721.

In this study, we aimed to estimate the contribution of environmental pollutants to the incidence, prevalence, mortality, and costs of paediatric disease in American children. We examined four categories of illness: lead poisoning, asthma, cancer, and neurobehavioural disorders. To estimate the proportion of each attributable to toxins in the environment, we used an environmentally attributable fraction (EAF) model. EAFs for lead poisoning, asthma, and cancer were developed by panels of experts through a Delphi process, whereas that for neurobehavioural disorders was based on data from the National Academy of Sciences. We define environmental pollutants as toxic chemicals of human origin in air, food, water, and communities. To develop estimates of costs, we relied on data from the US Environmental Protection Agency, Centers for Disease Control and Prevention, National Center for Health Statistics, the Bureau of Labor Statistics, the Health Care Financing Agency, and the Practice Management Information Corporation. EAFs were judged to be 100% for lead poisoning, 30% for asthma (range, 10–35%), 5% for cancer (range, 2–10%), and 10% for neurobehavioural disorders (range, 5–20%). Total annual costs are estimated to be US\$ 54.9 billion (range US\$ 48.8–64.8 billion): US\$ 43.4 billion for lead poisoning, US\$ 2.0 billion for asthma, US\$ 0.3 billion for childhood cancer, and US\$ 9.2 billion for neurobehavioural disorders. This sum

amounts to 2.8 per cent of total US health care costs. This estimate is likely to be low because it considers only four categories of illness, incorporates conservative assumptions, ignores costs of pain and suffering, and does not include late complications for which etiological associations are poorly quantified. The costs of paediatric environmental disease are high, in contrast with the limited resources directed to research, tracking, and prevention.

预览已结束, 完整报告链接和二维码如下:



https://www.yunbaogao.cn/report/index/report?reportId=5\_29158