LEAD EXPOSURE IN CHILDREN

Information note - 6 August 2007

Lead is a heavy metal with toxic properties, especially for children. Lead may enter the environment through various sources, such as leaded petrol (in countries where this type of fuel is still available), glazed ceramics, leaded pipes, recycling of car batteries, smelters, certain toys and trinkets and leaded paint, among many other sources.

Exposure to lead occurs mainly through inhalation of contaminated dust and air but *ingestion* of lead in dust, soil and paint chips is a major exposure pathway in children, because of their biological and behavioural characteristics. In facts, exposure is magnified by their activities and behavioural patterns ("hand-to-mouth") and biological characteristics (rapidly growing organs and systems).

Problems may be posed by lead in products that are currently available in a child's environment, such as the dust in homes with leaded paint or certain toys that are either made out of lead (e.g. play jewellery, trinkets) or contain lead (e.g. some plastics or paints). Weathering, peeling, or chipping lead-based paint plays a role in children's exposure, and those with "pica" (tendency to eat soil, paint chips and other materials) may be at particular risk.

Prolonged exposure induces lead accumulation in the body and may cause adverse effects on the central nervous system, on the heart and kidneys and on the blood and reproductive systems. However, the type and severity of health effects depend on the level, duration and timing of exposure, as well as the age of the person exposed.

The effects on the nervous system in children represent a most critical one, as chronic exposure is linked to a lowering of the IQ. Epidemiological studies consistently found adverse effects in children at blood lead levels down to 10 µg/dl and a growing number of publications suggest that lead-induced IQ decrements in children may occur at blood lead levels well below 10 µg/dl.

Lead exposures occur in most, or all, countries of the world. However, there is a substantial decrease in environmental lead exposure in countries that have eliminated lead from petrol, soldered cans and paints, and that have reduced lead in drinking water. As more information came out about the adverse impacts of lead on health, many of the lead uses and environmental releases have been reduced significantly in industrialized countries. However, some of the uses of lead which have been phased out may remain in some parts of the world, e.g. in certain paints. The lack of regulations about lead in paint or their poor enforcement, together with increasing international trade may result in health and environmental risks that may go across borders.

The Intergovernmental Forum on Chemical Safety (IFCS), an entity hosted by WHO addressed in 2006 the potential chemical risks from toys linked to chemical exposures and proposed actions to protect children from "toxic toys". Given the increasing international trade in trinkets and toys (including on the internet) and existing differences in toy safety standards globally, the Forum encouraged governments and industry to work towards developing guidance for toy safety and harmonization of international standards including actions towards elimination of use in toys of substances, such as lead, that are likely to result in adverse toxic effects (www.ifcs.ch).

WHO is in the process of reviewing and updating the latest information available on lead exposure in children and preparing new guidance and information materials for the health sector with the assistance of experts from developed and developing countries. The main objective of these materials is to improve the identification of known and unsuspected sources of exposure, the management of exposed children and - overall - the promotion of preventive and educational measures to protect children from lead in their environments.

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