

Lead-free Paints

If you are thinking of a fresh coat of paint for your house this festive season, hold on; the coat you have been applying for years contains lead — one of the most toxic elements to humans.

Lead and Environment

Lead released into the environment makes its way into the air, soil, and water. Lead can remain indefinitely in the environment as dust. Plants exposed to lead can absorb the metal dust through their leaves and take minimal amounts of lead from the soil. Man and animals are directly exposed to lead through ingestion and inhalation.

Lead in Paints

In paints and primers, lead is primarily used as pigment. Lead chromate and lead carbonate, commonly known as ‘chrome yellow’ and ‘white lead’, respectively, are the most used pigments. Lead is also added to paint to speed drying, increase durability, retain a fresh appearance, and resist moisture that causes corrosion.

In a recent study, the *Centre for Science and Environment (CSE)*, New Delhi, found that 72 per cent of the samples of popular paints in India had lead much higher than the voluntary limit specified by the Bureau of Indian Standards (BIS). Paints do not carry any warning, nor do they list the composition. In 2007, *Toxics Link*, New Delhi, revealed that all the major brands of paints, except one (ICI Dulux), contained up to 14 per cent of lead.

Health Hazards

Lead-based paint is a major source of lead poisoning for children and can affect adults as well, says the *US Consumer Products Safety Commission*. In children, it can damage the brain irreversibly, impairing the mental functioning. It can retard mental and physical development and reduce the attention span. (Fetal development, too, may be retarded even at extremely low levels of lead.) In adults, it can cause irritability, poor muscle coordination, nerve damage, and problems with reproduction. It may also increase blood pressure. Thus, fetuses, infants, young children, and adults with high blood pressure are the most vulnerable to the adverse effects of lead.

According to the *U.S. Environmental Protection Agency (EPA)*, deteriorating lead-based paint, lead-contaminated dust and residential soil are the most common sources of lead poisoning. Lead in house paint is a problem only if it is damaged or disturbed. Paint in good condition that is not flaking or chalking, or is covered by well maintained lead-free paint, is not a hazard in itself, says the *Department of Environment and Heritage, Australia*. But it can be a hazard if it is on surfaces subject to friction or impact such as windows, doors, or railings. People renovating their houses are in the worst danger. If old paint is not handled properly, lead dust and paint chips can remain in the home or on the garden years after the work is completed.

Lead-free Paints

Some paints are now manufactured without lead. The most widely used lead substitute is titanium dioxide, also used for colouring food. Organic pigments can also be alternatives. For quicker drying and gloss, zirconium can be used. The barium-zinc-sulfur combination replaces white lead. But the substitutes are costlier than lead. Therefore, the manufacturers prefer to use lead in paints.

In India, Nerolac has launched its lead-free paints. Now the company does not add any lead or other heavy metals in its manufacturing process (see logo), claims *nerolac.com*. ICI Dulux, too, does not use lead in its paints. Around the image of a green tree its label states: No added lead, mercury, chromium compounds. Asian Paints and Berger Paints also make similar claim. However, lead contamination, lower than limits set by various organisations, may occur through ingredients.

BIS Specifications

Most developed countries have restricted the use of lead in paints to a trace amount.

India too needs to regulate the use of lead; especially since its paint industry is growing. But we have no specific regulations, which limit harmful chemicals in paints. According to the BIS specifications, which are not mandatory, paints and emulsions shall not contain more than 0.1 per cent by mass (1,000 parts per million or ppm) of any toxic metals such as lead, cadmium, chromium (VI) and their compounds.

Protect Yourself

- * Apply a fresh coat of paint (possibly lead-free) before peeling or chipping of old paint.
- * Avoid exposure to dust, paint flakes, etc. during renovation or repairs.
- * Clean up paint chips immediately. Clean floors, window frames, window sills, and other surfaces weekly.
- * Wash your children’s hands and clean their play areas frequently.
- * Keep children from licking painted surfaces.
- * Remove shoes before entering your home to avoid bringing in lead from soil.
- * Prefer lead-free paints.

Sources: www.michigan.gov, cpsc.gov, epa.gov, environment.gov.au, toxicslink.org, downtoearth.org.in, en.wikipedia.org, nerolac.com

