

Progress through knowledge

Health and Environmental Research

The International Lead Zinc Research Organisation (ILZRO) was formed in 1958 as a not-for-profit research foundation. Funded and managed by the lead and zinc industries, it was established to design and implement research programmes to meet the collective research needs of the international lead and zinc industries. ILZRO's lead-related research and development programme is directed and funded by the International Lead Association and covers a wide range of areas, from health and environmental risk to product development. Over the past decade, the lead industry has sponsored more than €3 million of independent research investigating the health and environmental impacts of lead.

ILZRO has played a key role in progressing the scientific understanding of the environmental and health impacts of lead, zinc and indeed other metals. New models have been developed and adopted for assessing risk and for standard setting, such as the Lead Biotic Ligand Model (BLM). A BLM is a computer simulation programme that allows accurate predictions to be made of the bioavailability of lead in water and the toxicity that can be exerted towards aquatic organisms under a range of different water chemistry conditions. This model provides the most up-to-date science for regulatory agencies and industry seeking to accurately assess potential environmental impacts of lead and ensure that water quality standards are set to provide appropriate ecosystem protection.

The development of lead BLMs is just one example of how ILZRO seeks to ensure that industry practice is consistent with rapidly evolving scientific principles of risk assessment. Advances continue to be made in other areas of importance to the industry. In terrestrial (soil) risk assessments, regulatory agencies have relied upon artificial laboratory tests to set exposure limits, all the while recognising that effects of lead towards soil organisms differ widely in the 'real' environment.

ILZRO funded comparative studies which demonstrated the basis of these differences and allowed corrections to be applied to the laboratory data in order to ensure the protection of the 'real' environment. This research is now being reviewed by governments for use in EU and national legislation.

The potential effects of lead exposure upon humans, particularly upon the intellectual development of children, are another focus of ILZRO research. ILZRO, by sponsoring research and conferences, has advanced our understanding of impacts on the development of children. Ongoing programmes are now evaluating the complex interaction of social and environmental factors that must be understood if the effects of low-level lead exposure upon child development are to be accurately defined.

ILZRO also supports multiple efforts to evaluate the impact of occupational exposure to lead. These efforts have included the comparative evaluation of different exposure routes in the workplace, confirmation that uptake through the skin is of minimal significance, the evaluation of exposure potential posed by skin contamination and subsequent hand-to-mouth activity and the characterisation of occupational aerosols so that lead deposition, and subsequent uptake, in the lung can be accurately modelled.

New programmes are now applying novel research designs to determine the relationship between the duration and intensity of occupational lead exposure and potential health effects. The consistent application of the most advanced scientific strategies to define potential lead impacts ensures that exposure standards are protective of both occupational and general population health.

