

ZIMBABWE

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A. Regulation on sources

Source of lead	Relevant legislation/regulation	Government agencies	Data source
1. Used lead-acid battery recycling	1. No specific regulations for ULAB recycling		
2. Standards for lead in food	<ol style="list-style-type: none"> 1. The Zimbabwean government is a member of the Codex Alimentarius Commission, a joint FAO/WHO food standards program. 2. The Commission set limits of no more than 0.1 mg of lead per kg of pulses (such as lentils and dried beans), 0.4mg/kg for jams, jellies and marmalades, and 0.05 mg/kg for preserved tomatoes, amongst other maximum levels for processed fruits and vegetables. No other specific set of regulations found. 	<ol style="list-style-type: none"> 1. Ministry of Health and Child Welfare 2. Ministry of Lands, Agriculture and Rural Resettlement 3. Food Standards Advisory Board 	1. FAO . 2019. "General Standard for Contaminants and Toxins in Food and Feed."
3. Standards for lead in cookware	1. The Public Health Act (2018) gives power to the appropriate minister to prohibit the import, sale, possession or use of vessels which are intended to contain milk or semi-solid food which "of material containing in any part likely to come in contact with the contents lead or other poisonous or injurious substance in such proportion as to be likely to cause injury or danger to health, and fixing the maximum proportions of such substances which may be used in such vessels"	a. Ministry of Health and Child Welfare	1. Public Health Act (2018)

Source of lead	Relevant legislation/regulation	Government agencies	Data source
4. Standards for occupational exposure	<ol style="list-style-type: none"> 1. The Labour Act of 2005 is the primary legislation codifying occupational health and safety activities in the mining and quarrying industry. 2. National laws that cover occupational health and safety include NSSA Statutory instrument 68/90 accident prevention and workers compensation with emphasis on the duties of the employers and workers in accident prevention; the Pneumoconiosis Act which stipulates the need for medical examination for all workers in dusty occupations and the Factory and Works Act with its supporting regulations on general safety and health issues. according to the NSSA, 'lead and compounds' are chemical stress factors in the list of occupational injuries. 3. The Factory and Works Act requires that medical practitioners who attend to workers suffering from lead, phosphorous, arsenic, or mercury poisoning or anthrax as a result of occupational exposures report to inspectors appointed under the Act. 4. No other specific references with respect to lead exposure levels found. 	<ol style="list-style-type: none"> a. Ministry of Lands, Agriculture and Rural Resettlement b. National Social Security Authority (NSSA) c. Ministry of Public Service, Labour & Social Welfare 	<ol style="list-style-type: none"> 1. Jerie, Steven. 2012. "Occupational Health and Safety Problems among Workers in the Wood Processing Industries in Mutare, Zimbabwe." 2. Factories and Works Act 3. National Social Security Authority Research Reports
5. Lead in paint	<ol style="list-style-type: none"> 1. Does not currently have a lead paint law 		<ol style="list-style-type: none"> 1. UNEP. 2019. Update on the Global Status of Legal Limits on Lead in Paint September 2019.
6. Waste generated from smelting or mining	<ol style="list-style-type: none"> 1. The Environmental Management (Effluent and Solid Waste Disposal) Regulations 2007 set the limits for the discharge of total lead effluents and 	<ol style="list-style-type: none"> a. Environmental Management Agency 	<ol style="list-style-type: none"> 1. Environmental Management Agency. 2007. Environmental Management

Source of lead	Relevant legislation/regulation	Government agencies	Data source
	waste. No other regulatory framework on lead waste from mining and smelting found.		(Effluent and Solid Waste Disposal) Regulations, 2007

B. International Agreements

Agreement	Year Ratified
1. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	2012 (Accession)
2. Rotterdam Convention on the Prior Informed Consent Procedure for certain hazardous Chemicals and Pesticides in international trade	2012 (Accession)
3. Stockholm Convention on Persistent Organic Pollutants	2012

C. Blood lead-level monitoring programs

No details of a national or regional level structured program for blood lead level testing found.

D. Inventory of toxic sites (Toxic Sites Identification Program (TSIP), Pure Earth)

Site	Province/Region	Details (all data comes from the TSIP website)
1. Shamva artisanal goldmine	Mashonaland Central	
2. Iron Duke Pyrite Private Limited, Glendale	Mashonaland Central	
3. Chirodzo Primary School, South West, Harare		
4. ULAB Recycling by Chloride Zimbabwe, Workington, Harare	Mashonaland East	Chloride Zimbabwe recycles used lead-acid batteries for vehicles. Its activities are contaminating the surrounding areas with lead and sulphuric acid. People in the surrounding areas are exposed to the lead via dermal contact and inhalation/ingestion. The nearby suburbs of Rugare and Kambuzuma are also affected.
5. Central African Batteries Manufacturers	Mashonaland West	This battery manufacturer has an estimated 16,000 tonnes of fine soil that is 16% lead by weight which is posing a risk to residential groundwater supplies.

E. Scientific papers on lead exposure (Please contact info@gahp.net for information on studies not in the public domain)

Topic	Authors	Year	Title	Abstract/ description
Environmental exposure	Tongesayi, Tsanangurayi, Jameson Kugara, and Sunungurai Tongesayi	2018	Waste Dumpsites and Public Health: A Case for Lead Exposure in Zimbabwe and Potential Global Implications	<p>Background: Most waste sites in Zimbabwe are not sanitary landfills but open dumps that indiscriminately receive waste from municipalities, industries, commercial establishments, and social services establishments. People, including children, who eke out a living through scavenging the dumps expose themselves to environmental pollutants at the dumps via inadvertent ingestion and inhalation of contaminated dust, and dermal absorption. The public is potentially being exposed to a slew of the pollutants via air, water, and food, all contaminated by uncontrolled leachates and aerielly deposited dust and particulates from the sites. One of the unfortunate consequences of globalization is the sharing of contaminated food and the associated disease burdens; hence, regional contamination can have global impacts.</p> <p>Method: We analyzed the levels of lead at two waste sites in Zimbabwe to assess the daily exposure levels of Pb to children and adults who scavenge the sites as well as determine levels of the heavy metal that are potentially contaminating air, water, soils, and food in the country.</p> <p>Result: Levels of Pb ranged from 23,000 to 14,600,000 µg/kg at one of the sites and from 30,000 to 1,800,000 µg/kg at the other. Inadvertent daily exposure amounts that were calculated by assuming an inadvertent daily ingestion of 20-500 mg of soil/dust were mostly higher than the provisional tolerable daily intake established by the World Health Organization for infants, children, and adults. The XRF measurements were validated using certified reference samples, 2710a (Montana soil) and 2781 (domestic sludge), from the National Institute of Standards and Technology.</p>

Topic	Authors	Year	Title	Abstract/ description
Food exposure	Mapanda, F., E. N. Mangwayana, J. Nyamangara, and K. E. Giller	2007	Uptake of Heavy Metals by Vegetables Irrigated Using Wastewater and the Subsequent Risks in Harare, Zimbabwe	<p>Background: Contamination of leafy vegetables (Brassica species) by copper (Cu), zinc (Zn), cadmium (Cd), nickel (Ni), lead (Pb) and chromium (Cr), and the subsequent human exposure risks, were determined at two sites in the City of Harare, where wastewater is used for irrigating vegetables.</p> <p>Methods and Result: The concentrations of heavy metals (mg kg⁻¹ dry wt.) in vegetable leaves ranged from 1.0 to 3.4 for Cu, 18 to 201 for Zn, 0.7 to 2.4 for Cd, 2.5 to 6.3 for Ni, 0.7 to 5.4 for Pb and 1.5 to 6.6 for Cr. Bio-concentration factors in the range of 0.04–3 were obtained, with Zn and Cd having the highest concentration factors of 1.6 and 3, respectively. Estimated intakes rates of heavy metals from consumption of the vegetables in mg day⁻¹ ranged from 0.04 to 0.05 for Cu, 0.6 to 3.3 for Zn, 0.02 to 0.04 for Cd, 0.05 to 0.1 for Ni, 0.05 to 0.09 for Pb and 0.05 to 0.1 for Cr. Cadmium intake rates were above their recommended minimum risk levels (MRLs) at both sites, while Cu, Ni, Cr and Pb had daily intakes above 40% of their MRLs. Potential health risks, particularly from Cd intake, existed for the daily consumers of the leafy vegetables at both Mukuvisi and Pension sites. Thus, although the practice of growing leafy vegetables using wastewater for irrigation is aimed at producing socio-economic benefits, it is not safe and may not be sustainable in the long-term. There is need for an improved food quality assurance system to ensure that the vegetables comply with existing standards on heavy metal concentrations.</p>

F. Blood testing in National Health Surveys

National Health Survey	Zimbabwe Demographic and Health Survey (ZDHS)	Source
Purpose	The purpose of the survey is to provide reliable estimates of fertility levels and preferences, awareness and use of family planning methods, breastfeeding practices, nutritional status of mothers and young children, early childhood mortality and maternal mortality, maternal and child health, and knowledge and behaviour regarding HIV/AIDS and other sexually transmitted infections (STIs).	Zimbabwe National Statistics Agency and ICF International . 2016. Zimbabwe Demographic and Health Survey 2015: Final Report.
Sample size	The nationally representative sample consists of 9,955 women (age 15 to 49) and 8,396 men (age 15 to 54) from 10,534 households.	
Blood sample testing	Blood specimens were collected for anaemia testing and HIV testing from all children age (6 to 59 months), women and men who voluntarily consented to the testing.	
Latest round	2015	
Next round	2022 (Ongoing)	