# TANZANIA

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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. In mainland Tanzania there is a ban on the export of used lead acid batteries implemented by Order 204 of 2005.<br>2. As of 2016, no specific regulation on ULAB recycling. | | 1. McCartney, Patrick. 2014. Assessing If Notifications, Consents, Inspections and Enforcement of Transboundary Movements of Waste and Take-Back Procedures for Illegal Traffic Represent Environmentally Sound Management. Secretariat of the Basel Convention.<br>2. AGENDA. 2016. Used Lead Acid Battery (ULAB) Recycling in Tanzania: Survey Report. |
| 2. Standards for lead in food | 1. As of 2020, there exists a draft of the 'Code of practice for the prevention and reduction of lead contamination in foods' prepared by the Tanzania Bureau of Standards. It is aimed to guide regulators, farmers, and food manufacturers as well as consumers to prevent or reduce lead contamination in foods | a. Tanzania Bureau of Standards | 1. Tanzania Bureau of Standards. 2020. Code of practice for the prevention and reduction of lead contamination in foods. |
| 3. Standards for lead in cookware | 1. No specific regulation | | |
| 4. Standards for occupational exposure | 1. 'Diseases caused by lead or its compounds' is included in the list of occupational diseases caused by exposure to chemical agents during work activities according to the Occupational Safety and Health (Notification of Occupational | a. Ministry of Labour and Employment<br>b. National Environment | 1. ILO.2016. Occupational Safety and Health (Notification of Occupational Diseases, Injuries and Dangerous Occurrences) Rules, 2016. |

| Source of lead | Relevant legislation/regulation | Government agencies | Data source |
|---|---|---|---|
| | Diseases, Injuries and Dangerous Occurrences) Rules, 2016.<br>2. As of 2018, Tanzania was working formulating a national strategy and regulatory framework on chemicals and waste management as part of the UN Environment's Special Programme on Institutional Strengthening for Chemicals and Waste Management. | Management Council (NEMC)<br>c. Ministry of Health, Community Development, Gender, Elderly and Children | 2. UNEP. 2017. "The Special Programme on Institutional Strengthening for the Chemicals Cluster." |
| 5. Lead in paint | 1. 90-100 ppm, depending on the type of paint | a. National Environment Management Council (NEMC) | 1. UNEP. 2019. Update on the Global Status of Legal Limits on Lead in Paint September 2019. |
| 6. Waste generated from smelting or mining | 1. No specific set of regulations for lead waste generated from mining. However, the Mining Act (2010) states that conditions apply to a mining license holder include stacking or dumping any mineral or waste product in a manner consistent with the Environment Management Act and other environmental regulations.<br>2. In the case of ULABs smelting, Solid Waste Regulations (2009) include a waste classification system as an attached schedule (adapted from the Basel Convention). This classification list includes ULAB. | a. National Environment Management Council (NEMC)<br>b. Ministry of Health, Community Development, Gender, Elderly and Children | 1. Mining Act (2010)<br>2. EMS. 2013. The Application of Economic Instruments for Management of Used Lead-Acid Batteries (ULAB) in Tanzania |

## B. International Agreements

| Agreement | Year Ratified |
|---|---|
| 1. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal | 1993 (Accession) |
| 2. Rotterdam Convention on the Prior Informed Consent Procedure for certain hazardous Chemicals and Pesticides in international trade | 2002 |
| 3. ILO C170 - Chemicals Convention, 1990 (No. 170) Convention concerning Safety in the use of Chemicals at Work | 1999 |
| 4. Stockholm Convention on Persistent Organic Pollutants | 2004 |

## C. Blood lead-level monitoring programs

| Details | Data source |
|---|---|
| 1. According to the 2016 survey report by AGENDA on Used Lead Acid Battery recycling in Tanzania, the Occupational Safety and Health Authority (OSHA) does general medical check-ups every six months and check workers blood for lead levels annually at one of of the survey battery dismantling and smelting facilities. | AGENDA. 2016. Used Lead Acid Battery (ULAB) Recycling in Tanzania: Survey Report. |

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

| Site | Province/Region | Details (all data comes from the TSIP website) |
|---|---|---|
| 1. Dar-es-Salaam Harbor, Dar-es-Salaam | Dar-es-Salaam | Dar-es-salaam harbor is among the biggest in East Africa and continues to receive major industrial effluents containing heavy metals and petrochemicals. The central sewerage system discharges untreated sewage directly into the Indian Ocean. Sludge from septic tanks is sporadically removed using cesspit emptier or vacuum trucks, which in turn empty their contents either into the stabilization ponds or into a screen-house where the untreated contents are discharged into the Indian Ocean. Exposure is through ingestion and inhalation of dust/vapors. |
| 2. Temeke Wailes Vegetable Farm, Temeke district | Dar-Es-Salaam | Temeke Wailes Vegetable farm is one among other vegetable gardens found in Temeke District in Dar es Salaam Region with an estimated population of 4,142. A total of five-soil sample were collected from the following areas: residential, agricultural and onsite (industrial area) which were analysed for Lead and Cadmium contaminants at Department of Environmental Engineering Laboratory of Ardhi University. Laboratory test results showed the concentration of the contaminant ranged from 52.014-507.039mm/kg of Pb and 0.602-2.545mm/kg of Cd respectively. A primary suspected contaminant is Lead which comes in waste water effluents from Oil Company, municipal waste, hospital waste and garages. People working in the area are being exposed through dermal contact, inhalation of dust and through ingestion. Lead and Cadmium may migrate from one point to another through runoff during rainfall and through uptake by plants species in a vegetable farm. Key stakeholders from the government, non-state actors and private sectors were consulted to provide their opinion as far as vegetable farming in urban areas and its associated health impacts are concerned. Test results and selected photographs taken on site are uploaded in the database. |
| 3. Tazara Locomotive Workshop | Dar-es-Salaam | |

| Site | Province/Region | Details (all data comes from the TSIP website) |
|---|---|---|
| 4. Yuasa Battery Industry Limited | Dar-es-Salaam | |
| 5. Vingunjoti Area, Ilala district | Dar-es-Salaam | |
| 6. Luhanga River, Ilala district | Dar-es-Salaam | |
| 7. Misumi garage, Kinondoni district | Dar-es-Salaam | |
| 8. Ubungo Ward, Kinondoni | Dar-es-Salaam | |
| 9. Sahaa garage, Kinondoni district | Dar-es-Salaam | |
| 10. Mikocheni, Kinondoni | Dar-es-Salaam | |
| 11. Mbweni Mangrove Stand | Dar-es-Salaam | |
| 12. Tabata Mandela garage area, Ilala district | Dar-es-Salaam | |
| 13. Mikocheni industrial area, Kinondoni district | Dar-es-Salaam | |
| 14. Themi industrial area at Kambarage street | Arusha | Themi Industrial Area is located at Themi Ward, Kambarage Street, in Arusha region. In this area, there are a number of factories which include the Sunflag textile Mills.Some of this industries discharge their wastes which pollute the surrounding environment. For example, Sunflag discharges effluents that contain heavy metals Lead which is used for production especially for dying cloths. The community that live/works within and/or around the area can be affected by the Lead as it can spread through dust, air, water, and soil. Lead enters the body through ingestion, inhalation and absorption (skin). People working in the industry mostly do not wear protective gear such as masks, goggles, gloves, and safety boots when wo |
| 15. A-Z textile industry, Oltevesi ward | Arusha province | A-Z textile industry is one of the largest textile industries in Tanzania, found at Oltevesi Ward in Arusha region. The main pollution is Lead though there are heavy metals that are generated within the industry. These include Iron, Zinc and Copper which are used for production and they were identified by XRF. The industry mainly produces clothes for exportation and local use and a lot of dying processes are done during productions |

| Site | Province/Region | Details (all data comes from the TSIP website) |
|---|---|---|
| | | which require these heavy metals. The community that live/works within and/or around the industry can be affected by the Lead (Pb) as it can spread through dust, air, water and soil. Lead enters the body through ingestion, inhalation and absorption (skin). People who live around the industry are not aware of these heavy metals and even those who work within the industry do not wear protective gears such as masks, goggles, gloves, and safety boots. A lot of agricultural activities are carried around the industry where mostly, they cultivate maize, beans and vegetables. There are different water sources like streams and damp that crosses the industry from South East and they are likely to be polluted by lead which may migrate from one point to another through air and through runoff during rainfall. |
| 16. North Mara Goldmine | Mara | |
| 17. Nyakabale village, Geita district | Mwanza | |

## 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 | Nyanza, Elias C., Francois P. Bernier, Jonathan W. Martin, Mange Manyama, Jennifer Hatfield, and Deborah Dewey | 2020 | Effects of prenatal exposure and co-exposure to metallic or metalloid elements on early infant neurodevelopmental outcomes in areas with small-scale gold mining activities in Northern Tanzania | **Background:** Artisanal and small-scale gold mining (ASGM) is associated with release of neurotoxic metallic or metalloid chemical elements including lead (Pb), mercury (Hg), cadmium (Cd) and arsenic (As). Objective: To examine associations between prenatal exposure and co-exposure to total lead (T-Pb), total mercury (T-Hg), total cadmium (T-Cd) and total arsenic (T-As) and infant neurodevelopment at 6 to 12 months of age in areas with ASGM activities in Tanzania. **Methods:** Women in their second trimester of pregnancy who resided in ASGM areas were enrolled from 2015 to 2017 (n = 883). At 6 to 12 months of age, children were assessed with the Malawi Developmental Assessment Tool (MDAT) (n = 439). We measured T-Pb, T-Hg, and T-Cd in maternal dried blood spots and T-As in maternal urines. Poisson regression was used to examine associations between prenatal concentrations of these |

| Topic | Authors | Year | Title | Abstract/ description |
|---|---|---|---|---|
| | | | | elements and neurodevelopmental outcomes.<br>**Results:** Prenatal T-Hg concentration was associated with global neurodevelopment status (aPR 1.03, CI:1.01–1.04; p < 0.001) and language impairment (aPR 1.05, CI:1.03–1.07; p < 0.001) on the MDAT. When prenatal T-Hg and T-As values were at or above the human biomonitoring reference values (≥95%) of the German Environmental Survey for Human Biomonitoring, that is 0.80 µg/L and 15 µg/L, respectively, the prevalence ratio of global neurodevelopmental impairment was two times higher (aPR 2.1, CI:1.0–4.3; p = 0.034). There was a 40% increase in the prevalence ratio of global neurodevelopmental impairment (aPR 1.4, CI:0.90–2.10, p = 0.027), when prenatal T-Hg was at or above the reference value of 0.80 µg/L and T-Pb was at or above the reference value of 35 µg/L. When prenatal T-Hg was at or above the reference value of 0.80 µg/L and T-As was at or above the reference value of 15 µg/L, the prevalence ratio of global neurodevelopmental impairment was two times higher (aPR 2.1, CI:1.0–4.3; p < 0.034). |
| Food exposure | BE Chove, WR Ballegu, LM Chove | 2006 | Copper and lead levels in two popular leafy vegetables grown around Morogoro Municipality, Tanzania | **Background:** A study was carried out to determine the levels of two heavy metals, Lead (Pb) and Copper (Cu), in two popular leafy vegetables grown around Morogoro Municipality in Tanzania.<br>**Methods and Results:** Vegetable samples of Pumpkin leaves (Cucurbita moschata) and Chinese cabbage ( Brassica chinensis) were collected from three sites and analysed for their concentrations of the two metals using an Atomic Absorption Spectrophotometer. The three sites, namely Mazimbu, Kihonda and Towelo are located within a 10 km perimeter. The site selection was based on the anticipated levels of contamination of the water used for irrigation. The results showed that the levels (mg/100g dry weight) ranged from 0.885 to1.39 for Copper and 0.05 to 0.315 for Lead. The levels of Lead and Copper varied between the vegetable varieties and from site to site. Vegetables from Mazimbu showed higher concentration levels of the two metals compared to the other sites in both varieties. Towelo vegetables had relatively low concentrations. There was a significant difference (P<0.05) in levels of the two metals across the sites but there was no significant difference (P>0.05) in the levels of Copper between the two vegetable varieties from all the three sites. There was a significant difference (P<0.05) in the levels of Lead between the vegetable |

| Topic | Authors | Year | Title | Abstract/ description |
|---|---|---|---|---|
| | | | | varieties. The levels of both Lead and Copper in the two vegetables were found to be below the maximum permissible levels recommended by FAO/WHO for the two metals in vegetables. |
| Occupational exposure | L. M. B. Rongo, F. Barten, G. I. Msamanga, D. Heederik, W. M. V. Dolmans | 2004 | Occupational exposure and health problems in small-scale industry workers in Dar es Salaam, Tanzania: a situation analysis | **Background:** Workers in informal small-scale industries (SSI) in developing countries involved in welding, spray painting, woodwork and metalwork are exposed to various hazards with consequent risk to health. Aim To assess occupational exposure and health problems in SSI in Dar es Salaam, Tanzania.<br>**Methods:** Focused group discussions (FGD) were conducted among SSI workers. Participants were assessed for exposure to occupational and environmental hazards, the use of protective equipment and health complaints by interview. The findings were discussed with participants and potential interventions identified.<br>**Results:** Three hundred and ten workers were interviewed (response rate 98%). There was a high level (>90%) of self-reported exposure to either dust, fumes, noise or sunlight in certain occupational groups. There was low reported use of personal protective equipment. There was a high level of self-reported occupational health problems, particularly amongst welders and metalworkers. Workers reported their needs as permanent workplaces, information on work related hazards, water and sanitation, and legislation for SSI.<br>**Conclusions:** In SSI in Tanzania, our study suggests that workers have high levels of exposure to multiple health hazards and that use of protective equipment is poor. This group of workers warrants improved occupational health and safety provision. |

## F. Blood testing in National Health Surveys

| National Health Survey | Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS) | Source |
|---|---|---|
| Purpose | The primary objective of the survey is to provide reliable estimates of fertility levels, marriage, sexual activity, fertility preferences, awareness and use of family planning methods, breastfeeding practices, nutrition, childhood and maternal mortality, maternal and child health, malaria and other health related issues, as well as prevalence of anaemia among women age 15-49 and malaria infection and anaemia among children under 5. | Ministry of Health, Community Development, Gender, Elderly and Children - MoHCDGEC/Tanzania Mainland, Ministry of Health - MoH/Zanzibar, National Bureau of Statistics - NBS/Tanzania, Office of Chief Government Statistician - OCGS/Zanzibar, and ICF. 2016. Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS) 2015-16. |
| Sample size | 13,266 women (age 15 to 49) in 12,563 households and 3, 514 men (age 15 to 49) in one-third of the sample households were interviewed. The sample is nationally representative | |
| Blood sample testing | Blood samples were collected from women respondents and from children (age 6 to 59 months) for haemoglobin measurement as well as to perform on-the-spot testing for malaria in the children. | |
| Latest round | 2015-16 | |
| Next round | Unknown | |