

## ARGENTINA

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### A. Regulation on sources

Source of lead	Relevant legislation/regulation	Government agencies	Data source
1. Used lead-acid battery recycling	<ol style="list-style-type: none"> <li>1. In 2016, the Ministry of Environment published a resolution (No. 522 - E/2016) to establish objectives, definitions, and guidelines for the development of a national strategy for Universally Generated Special Wastes (REGUs)</li> <li>2. REGUs are defined as those wastes that, due to the amount generated and their hazardous characteristics, require different management from other wastes to ensure that they are dealt with in an environmentally adequate manner. This list of REGUs includes lead-acid batteries</li> </ol>	<ol style="list-style-type: none"> <li>a. Ministry of Environment</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="#">Ministry of Justice and Human Rights</a>. 2016. "Ministry of the Environment and Sustainable Development Resolution 522 - E / 2016"</li> </ol>
2. Standards for lead in food	<ol style="list-style-type: none"> <li>1. The Argentine Food Code provides specific guidelines with reference to lead in:               <ol style="list-style-type: none"> <li>i. Utensils, Containers, Containers, Devices and Accessories (Chapter 4)</li> <li>ii. On Food Products (Chapter 3)</li> <li>iii. "Correctivos y coadyuvantes" (Chapter 16)</li> <li>iv. Food Additives (Chapter 18) and other chapters</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>a. Ministry of Health</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="#">National Administration of Drugs, Food and Medical Technology</a>. 2021. Argentine Food Code</li> </ol>
3. Standard for lead in cookware	None identified		
4. Standards for occupational exposure	<ol style="list-style-type: none"> <li>1. Several codes and rules and regulatory framework for protection against particular occupational hazards including a prohibiting lead, lead sulfate, and arsenic in paint for interior buildings</li> </ol>	<ol style="list-style-type: none"> <li>a. Ministry of Labour, Employment and Social Security</li> </ol>	<ol style="list-style-type: none"> <li>1. <a href="#">ILO</a>. Database of national labor, social security and related human rights legislation (original documents in Spanish)</li> </ol>
5. Lead in paint	<ol style="list-style-type: none"> <li>1. 600 ppm lead limit for the manufacture, import, distribution and marketing of paints; prohibits use</li> </ol>		<ol style="list-style-type: none"> <li>1. <a href="#">UNEP</a>. 2019. Update on the Global Status of Legal</li> </ol>

Source of lead	Relevant legislation/regulation	Government agencies	Data source
	of lead carbonate and lead sulphate and any other products containing these pigments		Limits on Lead in Paint September 2019.
6. Waste generated from smelting or mining	1. National Law No. 24,585 on Environmental Protection for Mining Activity and Complementary Regulations specifies the permissible level of lead (and environmental impact) from mining activities	a. Ministry of Productive Development b. Ministry of the Environment and Sustainable Development	1. <a href="#">Argentina Mining Information Centre</a> . Socio-environmental regulatory aspects: Main national standards for environmental assessment (original document in Spanish)

## B. International Agreements

Agreement	Year Ratified
1. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	1991
2. Rotterdam Convention on the Prior Informed Consent Procedure for certain hazardous Chemicals and Pesticides in international trade	2004
3. Globally Harmonized System of Classification and Labelling of Chemicals	2017
4. Stockholm Convention on Persistent Organic Pollutants	2005

### **C. Blood lead-level monitoring programs**

None identified

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

There are 67 lead contamination sites in Argentina. For more information, please visit [www.contaminatedsites.org](http://www.contaminatedsites.org)

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

Topic	Authors	Year	Title	Abstract/ description
Childhood Exposure	Martins, Enrique, Ana Varea, Karina Hernández, Marisa Sala, Ana Girardelli, Victoria Fasano, and Liliana Disalvo	2016	Blood Lead Levels in Children Aged between 1 and 6 Years Old in La Plata, Argentina. Identification of Risk Factors for Lead Exposure	<p><b>Introduction:</b> Lead has neurotoxic effects in children, even at a very low level in blood. The risk factors (RFs) for lead exposure have not been adequately identified in La Plata. The objectives of this study were to determine mean blood lead levels and identify RFs in children aged 1 to 6 years old living in La Plata and the outskirts.</p> <p><b>Population and methods:</b> A cross-sectional study was conducted in children who attended primary health care centers for a health check-up. Blood lead levels were determined by atomic absorption spectroscopy, and a socioenvironmental survey was administered to outline RFs. The Mann-Whitney test was used to compare measurements. A multivariate statistical analysis was done to establish the most relevant RFs.</p> <p><b>Results:</b> A total of 319 children participated (51% were boys); the median (interquartile range) blood lead level was 2.2 pg/dL (1.1-3.6 pg/dL). Significant mean differences in blood lead levels were observed for age ≤ 3 years old, anemia, pica behavior, overcrowding, dirt floors, and maternal education &lt; 7 years. Age ≤ 3 years old and pica behavior were both RFs with significant odds ratios (ORs). The OR as adjusted by logistic regression was significant only for age ≤ 3 years old.</p> <p><b>Conclusions:</b> The median blood lead level in the studied population was 2.2 pg/dL. The main RFs identified for lead exposure were age ≤ 3 years old and pica behavior. Other less relevant RFs included anemia, maternal education &lt; 7 years, overcrowding, and dirt floors.</p>
Childhood Exposure	L, Disalvo, Aab C, Pereyras S, Pattín J, Apezteguía M, Iannicelli Jc, Girardelli A, and Varea A	2009	Blood Lead Levels in Children from the City of La Plata, Argentina. Relationship with Iron Deficiency and Lead Exposure Risk Factor	<p><b>Introduction:</b> Environmental exposure to lead and the subsequent poisoning are a main public health concern worldwide. Children have a higher vulnerability to lead toxic effects, and many reports have shown the association between iron deficiency and lead poisoning. In Argentina, reports about lead levels in children are scarce. Our aims were to assess blood lead levels in children and determining their relationship with iron deficiency and known lead exposure risk factors.</p> <p><b>Material and methods:</b> We performed a cross-sectional study in a sample of 93 children (age range, 6 months to 5 years) receiving care at La Plata</p>

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				<p>Children's Hospital. A social and environmental survey was done, and blood lead, hemoglobin and ferritin levels were assessed.</p> <p><b>Results:</b> Geometric mean blood lead level was 4.26 microg/dl (95% CI, 3.60-5.03); prevalence of blood lead levels <math>\geq 10</math> microg/dl was 10.8%. Higher blood lead levels were found in children living in households with lead-handling contaminating activities (6.74 vs. 3.78 microg/dl; <math>p=0.005</math>) and in very low-income households (5.68 vs. 3.71 microg/dl; <math>p=0.020</math>). The presence of blood lead levels <math>\geq 10</math> microg/dl was strongly associated with iron deficiency (OR 5.7; 95% CI: 1.34-23.41) and with lead-handling activities at home (OR 4.8; 95% CI: 1.12-20.16).</p> <p><b>Conclusion:</b> The prevalence of blood lead levels <math>\geq 10</math> microg/dl is a matter of concern in the population studied. Iron deficiency and development of lead-handling activities at home were the risk factors associated with high blood lead levels.</p>
Environmental Exposure	Uhart, Marcela, Hebe del Valle Ferreyra, Marcelo Romano, Ayelén Muchiutti, Silvia Alzuagaray, Martín Santiago, and Andrea Caselli.	2019	Lead Pollution from Hunting Ammunition in Argentina and Current State of Lead Shot Replacement Efforts	<p><b>Background:</b> Waterfowl hunting in Argentina is a profitable industry that attracts hunters from all over the world. Most hunting occurs as high-end hunting tourism, through which registered outfitters service predominantly foreign clients on private lands.</p> <p><b>Discussion:</b> Lead pollution from hunting ammunition is increasingly recognized as a significant local problem, impacting wildlife, aquatic and terrestrial habitats, and extending to vulnerable human rural communities. Regulatory frameworks that restrict lead shot use are a budding success story but remain challenged by their constrained geographic range and limited compliance rooted in unavailable nontoxic ammunition. Changes in hunting practices in Argentina are long overdue.</p>

Topic	Authors	Year	Title	Abstract/ description
Maternal Exposure	Martins, Enrique, Ana Varea, María Apezteguía, Horacio F. González, Ana Girardelli, Laura Sanchez Caro, Mario Lobisuto, Griselda Delgado, and Liliana Disalvo	2014	Prenatal Lead Exposure and Relationship with Maternal Exposure Determinants in a Public Maternity Hospital of La Plata, Argentina	<p><b>Objective:</b> Prenatal lead exposure is a health hazard that may cause cognitive development impairments and other adverse effects in children.</p> <p><b>Methods:</b> We conducted a cross sectional study analyzing cord blood lead levels (CBLL) of newborns and their relationship with maternal determinants of lead exposure. Mothers answered a questionnaire about socio-demographic, lifestyle habits and environmental characteristics. We used Mann–Whitney's test to compare CBLL geometrical means (GM) corresponding to the presence or absence of each lead exposure determinant, and Chi square test to study the relationship between CBLL and maternal lead exposure determinants.</p> <p><b>Results:</b> A total of 159 newborns participated in the study. CBLL GM was 2.1 µg/dL; and 25% of the participants had a measurable CBLL (LOQ = 3.3 µg/dl). Although the participants had several determinants of lead exposure, we only found a significant relationship with inside household determinants, such as presence of lead piping (<math>p = 0.026</math>), unplastered walls (<math>p = 0.046</math>) and peeling paint (<math>p = 0.048</math>). Our results show that CBLL GM was similar to that reported in several studies conducted around the world. However, 25% of the participants might have some degree of risk for lead poisoning.</p>
Occupational Exposure	López, C. M., A. E. Piñeiro, N. Núñez, A. M. Avagnina, E. C. Villaamil, and O. E. Roses	2000	Thyroid Hormone Changes in Males Exposed to Lead in the Buenos Aires Area (Argentina)	<p><b>Methods:</b> The relationship between lead levels in blood (PbB) and hormones T3, T4, T4F and TSH were studied in 75 subjects exposed to lead at work. PbB levels in blood were determined by atomic absorption spectrophotometry and hormones by enzymeimmunoassay.</p> <p><b>Results:</b> Positive and significant correlations among thyroid hormones and TSH vs blood lead level in the ranges 8–50 and 26–50 µg dl<sup>-1</sup> were found ('r' between 0.304 and 0.621 and 0.431 and 0.619, respectively). At PbB levels between 8 and 26 µg dl<sup>-1</sup> significant correlation was only found for TSH (<math>r = 0.731</math>). In the range PbB 50–98 µg dl<sup>-1</sup>, 'r' was significant only for T3 (<math>-0.746</math>) and T4 (<math>-0.514</math>). Significant differences were observed in T4 and T4F levels between exposed and non-exposed groups. The results obtained indicate the need for monitoring thyroid hormones and TSH levels in workers exposed to lead.</p>

## F. Blood testing in National Health Surveys

National Health Survey	Argentina National Survey of Nutrition and Health 2 (Encuesta Nacional de Nutrición y Salud ENNYS 2)	Source
Purpose	The main purpose of this survey is to provide information on population health and nutrition. It provides an evaluation of various nutrition factors including the frequency of consumption of different food groups and consumption patterns, intake of food and nutrients ( 24-hour recall), breastfeeding practices, food programs in school settings, food policies, nutrition labeling, advertising of food products, and other relevant health topics such as anthropometric measures, physical activity, celiac disease and vaccines.	<a href="#">Federación Argentina de Graduados en Nutrición (FAGRAN)</a> . 2019. "2° Encuesta Nacional de Nutrición y Salud (ENNYS 2). Indicadores priorizados. Septiembre 2019" (in Spanish)
Sample size	21,358 individuals (5763 infants from 0-23 months, 8228 children and adolescents from 2-17 years, 7367 adults).	
Blood sample testing	Blood samples (and urine samples) were taken to evaluate: anaemia, micronutrient deficiency (such as folic acid and Vitamin B12), urine sodium and kidney function.	
Latest round	2019	
Next round	Unclear	