

LEAD Action NEWS

LEAD Action News vol. 17 no. 1, September 2016 ISSN 1324-6012 The newsletter of The LEAD (Lead Education and Abatement Design) Group Inc. PO Box 161 Summer Hill NSW 2130 Australia Ph: (02) 9716 0014,

Email www.leadsworld.com/about-us/contact-us/

Web: www.lead.org.au/; www.leadsworld.com.

Editor: Elizabeth O'Brien. Graphics/Web-Publishing: Rekha Vasudev , Rocky Huang & Arin Bala

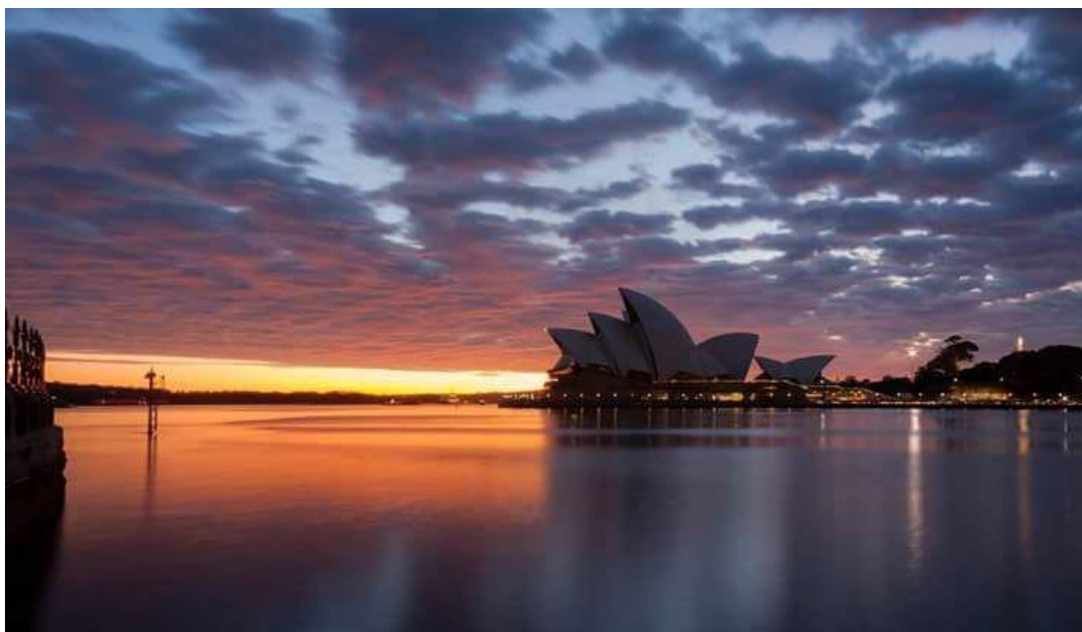
Lead-safety Art Awards in Lead Week of Action

The only Australian event on the List of events for the International Lead Poisoning Prevention Week of Action (23-29 October 2016) at the World Health Organization website at www.who.int/ipcs/lead_campaign/events/en/ is Volcano Art Prize (VAP) Awards Ceremony in Sydney – so let's celebrate!



You can see all the entries for this year – our fifth and biggest year yet for VAP – in this September 2016 issue of LEAD Action News. And you can even “attend” the Awards Ceremony via Skype. The 2016 VAP Art Judge, Kari McKern, will be handing out the beautiful 30 Pictureproducts mug prizes and the People's Choice and Judge's cash prizes at 6pm on Monday 24th October 2016 at Creative Einstein in Campsie.

Another way for you to take action in the fourth International Lead Poisoning Prevention Week of Action is to order a Lead Safe World Poster at www.leadsworld.com/shop and have it displayed at your GP or vet clinic, childcare centre, school, university, workplace, gun club or at home 'cos you like the picture! Any VAP Entry can be made into a poster!



2016 Volcano Art Prize (VAP) Entry. Title: Sunrise on Sydney Harbour, Lead-safety Message: Every speck of lead dust or paint that is washed into Sydney Harbour when it rains, affects the marine life and builds up in the sediment. Report dusty demolition work or flaking/sanding paint to the Environment Protection Authority. Artist/Photographer: Peter Larkin. Photo taken with a Canon EOS 40D SLR camera.

<http://volcanoartprize.com/portfolio-item/sunrise-on-sydney-harbour/>



Contents

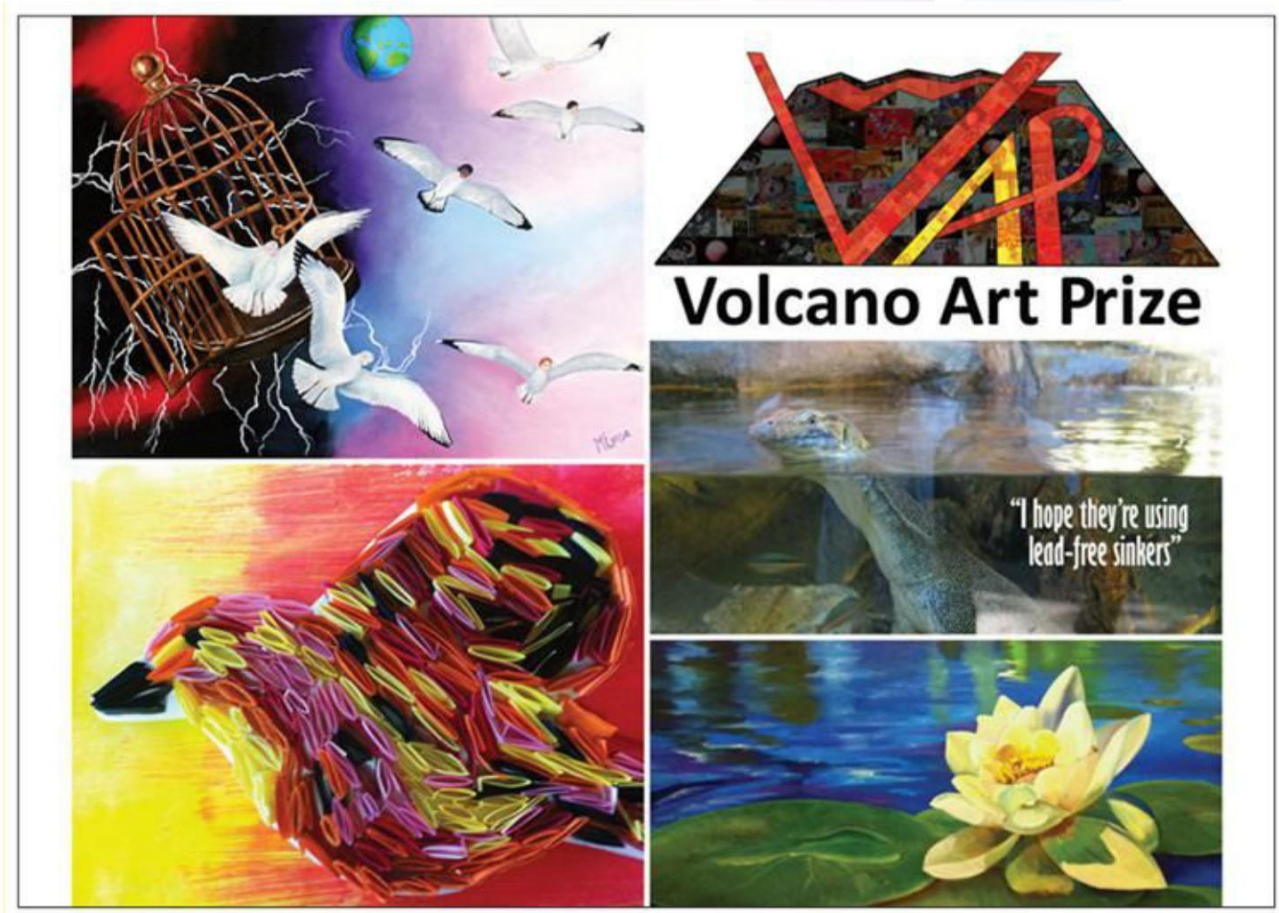
Lead-safety Art Awards in Lead Week of Action	1
Editorial	3
La Oroya sigue siendo la ciudad mas contaminada del mundo	6
La Oroya continues being the most polluted city of the world	17
Most of the world's population breathes dirty air.....	29
Tips & Facts: Lead is a significant component of fine particulate matter	32
EDF Lead Policy Tool - 40 years of sound US policy	33
The LEAD Group's objection to proposed Ingleburn Lead Acid Battery "Recycling" Facility	35
Remediator #7, July 2016: globalCARE	37
On the move	37
China CleanUp	37
Indian action	38
Thailand	38
Australasia and the world	38
Capacity is key	39
Why we're here	40
Drinking water lead contamination flows on.....	42
Lead: a modern day problem in plumbed rainwater	43
US turmeric and curry powders recalled for excess lead.....	48
Lead Safety and Home Remodelling.....	51
Australian Dust Removalists Association (ADRA) AGM notice.....	54
Quotable Quotes: Dust & Detox Quotes from The life-changing magic of tidying up	55
Lead Archiving Volunteer Opportunity	56
Lead poisoning of free-living birds in Esperance.....	56



Volcano Art Prize 2016 Entries – each ready for your Lead Safe World Poster! 59

Free Subscription to e-Newsletter Notifications / Membership & Donation Forms 86


Volcano Art Prize Awards Ceremony: Mon 24th October 2016! During International Lead Poisoning Prevention Week of Action (Sun 23rd October to Sat 29th October 2016) in Sydney or via Skype.



Postcard of 2014 VAP Entries collaged by Rocky Yiru Huang

Editorial

By Elizabeth O'Brien, Editor-in-Chief, LEAD Action News

First I'd really like to thank Toby Griffin of [Pictureproducts](#) for being the major Volcano Art Prize (VAP) sponsor for the 5th year in a row. 

And to thank PARE Medical Services Pty Ltd for a major donation this quarter that will keep us going into 2017.



First up in this issue, we have the most important work of Dr Godofredo Arauzo-Chuco from The LEAD Group's Technical Advisory Board. Dr Arauzo-Chuco's work in Peru was first mentioned by The LEAD Group in 2006 in "Caso Presentado: Ayuda a un doctor que ayuda 35,000 personas envenenadas por plomo alrededor de la fundidora de plomo en la Oroya-Peru Como Glass trabaja" [English translation: "Case File: Helping a Doctor help 35,000 Lead-Poisoned People Around the La Oroya Lead Smelter"] at www.lead.org.au/fs/La_Oroya_Peru_20060324_Spanish.pdf; [www.lead.org.au/fs/La_Oroya_Peru_20060324_English.pdf]

Godofredo is truly a hero of the people.

Another lead hero of mine, Barbara Miller of the Silver Valley People's Action Coalition, and Silver Valley Community Resource Center (SVCRC) in Kellogg, Idaho has had a major media success with the 12th June 2016 article Bunker Hill Superfund site is still a toxic mess, with legacy of suffering in Newsweek. You can read the first four paragraphs of the Newsweek article (subtitled Thirty Years after the EPA Declared the Mines of the Coeur d'Alene River Basin a Superfund Site, Locals Still Suffer from Lead Poisoning), at www.highbeam.com/doc/1G1-455360872.html and subscribe to Newsweek to read the rest. Congratulations Barbara!

Next up is first the bad news on fine particulate air pollution deaths from the World Health Organization. WHO estimates that around 3 million people die annually due to outdoor air pollution and in 2012 6.5 million died due to indoor and outdoor air pollution together. Our Tips & Facts section explains why lead is a significant component of fine particulate matter. Then some good news from the USA in the form of a Lead Policy Tool which every country could use as a model to bring down blood lead levels.

Hoping to prevent the creation of more lead poisoned youth at yet another lead-contaminated industrial site in Sydney, The LEAD Group has objected to a proposed battery-breaking facility at Ingleburn. See the submission to Planning NSW below.

Prof Ravi Naidu of the Cooperative Research Centre (CRC) for Contamination, Assessment & Remediation of the Environment (CARE) or CRC CARE, has been doing some excellent work on contaminated sites in the globalCARE program and I'd like to thank CRC CARE for permission to reprint their July 2016 Remediator #7 with all the latest on globalCARE.

Macquarie University Doctoral Student Paul Harvey and The LEAD Group's President Professor Mark Taylor have been interviewed by 9News in Sydney and Perth about an journal article due to be published in November 2016, called Widespread copper and lead contamination of household drinking water, New South Wales, Australia.



The following is an excerpt: "Lead free taps: Testing in the study shows that using a tap made from stainless steel, which does not contain lead, prevents lead entering the water at the tap stage of the plumbing infrastructure."

The really good news is that Vinco Hardware, an importer of No Lead stainless steel kitchen and bathroom (home and restaurant) tapware, has become the newest Lead Safe World Partner of The LEAD Group, and donated a stainless steel tap – called "Clyde"! – for The LEAD Group's office rainwater kitchen drinking water supply. See http://vinco.com.au/product-category/lead-free-bathroom-kitchen-tapware/?term_id=70 (and click on "click on here to read").

Paul Harvey has kindly supplied an article for LEAD Action News about the research and a LEAD Group Kit purchaser has submitted her experience with leaded drinking water.

Then we have a couple of articles from the US on leaded spices and on household dust which is followed by a notice from the Australian Dust Removalists Association (ADRA) welcoming contractors to apply to join ADRA - so that The LEAD Group has more ceiling dust removalist referrals in Australia! Home cavity dust detox should always be done by an ADRA contractor but we have some quotable quotes to inspire you to do interior dust detox yourself! And it would be wonderful if anyone near Summer Hill would volunteer to manage files in The LEAD Group's office.

Thanks go to the Australian Veterinary Association for permission to reprint the final article by Dr Rupert Woods about early December 2016 when lead ore dust filled the air in the port of Esperance in Western Australia and 9,000 birds died of lead poisoning (before the ore was shipped to China). Check out the 2016 VAP entry on the topic of protecting birds (below), as well as all the other 2016 VAP entries, in the final photospread.



Artist's Name: Brandon Banh

Title of Image: Yellow and blue bird
Safety Message: When lead ore dust filled the air in the port of Esperance in Western Australia, 9,000 birds died of lead poisoning, before the ore was shipped to China. This should never happen again – birds need to be protected from pollution. Materials: Quilled non toxic coloured paper

URL: <http://volcanoartprize.com/portfolio-item/yellow-and-blue-bird/>

Once more, I invite you to take action today, in readiness for the WHO International Lead Week of Action held during the last full Sunday to Saturday week in October.



La Oroya sigue siendo la ciudad mas contaminada del mundo



Oroya ciudad más contaminada del mundo. No más humo, Carajo! FOTO del complejo metalúrgico Doe Run (Horno de Fundición de Plomo) en La Oroya, Perú.

Dr. Godofredo Arauzo Chuco, Médico Cirujano, Ginecólogo Obstetra, Investigador del Medio Ambiente, Master en Medicina, E mail: godo_ara@hotmail.com

Objetivos. Se realiza investigación de La Oroya para determinar el grado de contaminación actual

Material y Métodos. El estudio es de revisión de la literatura más relevante sobre esta ciudad.

Resultados. Ya no hay humos en la Oroya desde el 2009, pero los niños siguen naciendo contaminados con plomo: **recién nacidos 19.06 ug/dl., niños de 2 a 4 años 38.6 ug/dl., niños de 2 a 10 años 33.6 ug/dl., mayores de 10 años 29.05 ug/dl., mujeres gestantes 39.49 ug/dl y varones adultos 39.6 ug/dl.; plomo en el aire 27.53 ug/m³, y en las viviendas cifras superiores a 2000 mg/kg.**



Conclusiones. El complejo metalúrgico de La Oroya dejó de funcionar en el 2009 pero los habitantes siguen contaminados especialmente con el plomo; se ha contaminado también el agua, aire, suelo y lluvia, produciendo la lluvia ácida; a pesar de no funcionar desde el 2009, La Oroya sigue siendo la ciudad más contaminada del mundo.

SUMMARY IN ENGLISH

Goals. This is an investigation of La Oroya, conducted to determine the degree of pollution.

Materials and Methods. The research is the review of the most outstanding literature on this city.

Results. Although the smoke has been removed since 2009, children are still contaminated with lead since newborn: newborn 19.06 ug/dl, children between 2 and 4 years 38.6 ug/dl, children between 2 and 10 years 33.6 ug/dl, children with more than 10 years 29.05 ug/dl, pregnant 39.49 ug/dl, adult men 39.6 ug/dl; lead in the air 27.53 ug/m³, and households lead levels greater than 2000 mg/kg. .

Conclusion. 'La Oroya' metallurgical complex stopped working in 2009, but the people are still contaminated, especially with lead. Besides, water, air, soil and rain have been contaminated, and acid rain has occurred. Despite the complex is not working since 2009, La Oroya remains the most polluted city in the world.

INTRODUCCIÓN

En la Oroya y alrededores había 5 haciendas y 2 comunidades campesinas; el desarrollo de esta ciudad se inició con la llegada del ferrocarril en Enero de 1890, la construcción del ferrocarril al Cerro de Pasco en 1900 a 1904, y a Huancayo entre 1905 a 1908; también con la fundación de la Compañía Mercantil de la Oroya en 1892 y la construcción de la fundición en 1922 por la compañía 'Cerro de Pasco Cooper Corporation'.

El 1 de Enero de 1974 la revolución del Presidente Velazco Alvarado nacionalizó el complejo y traspasó su manejo a Centro Min Perú; en 1997, la empresa norteamericana Doe Run Perú Company adquirió el complejo en subasta por 121.5 millones dólares. El complejo metalúrgico tenía entonces 10,000 trabajadores, luego empezó Doe Run con los despidos colectivos hasta tener solamente 2500 personas al dejar de funcionar el complejo en el 2009.(1).

Al adquirir la refinería Doe Run se comprometió a cumplir con lo estipulado con el 'Programa de Adecuación y Manejo Ambiental (PAMA)' (2). **En 2009, Doe Run declaró no disponer de capital suficiente para adquirir los minerales que se procesaban en el complejo; se inició entonces el proceso de liquidación (3). El juez del 39 Juzgado Penal de Lima inició proceso penal por los cargos formulados por la Fiscalía contra el propietario y directivo de Doe Run, Ira Rennert y Bruce Neil, respectivamente, por presunto fraude en agravio del Estado (4). El 6 de Diciembre del 2002 un grupo de ciudadanos de Oroya demandaron al gobierno peruano por su inacción en proteger su derecho a**



la salud y a un entorno saludable; en primera (1^o de abril de 2005) y segunda instancia (11 de octubre de 2005), hubo resolución a favor de los demandantes; el 12 de mayo de 2006, el Tribunal Constitucional ordenó al gobierno la adopción de una serie de medidas a favor de los habitantes de la Oroya en el plazo de 30 días; además, el Tribunal Constitucional exhortó a diversas entidades públicas, así como a empresas privadas incluido Doe Run a participar en las acciones necesarias para la protección de la salud de los pobladores de La Oroya, así como la del medio ambiente

(5). El 21 de noviembre de 2005 tres ONGs (Asociación Interamericana para la Defensa del Ambiente AIDA, Centro de Derechos Humanos y Ambiente – CEDHA, y EarthJustice) solicitaron medidas cautelares a favor de los habitantes de Oroya a la Comisión Interamericana de Derechos Humanos; en marzo de 2010, la Comisión Interamericana celebró una audiencia en Washington para analizar la aplicación de las medidas cautelares; allí, representantes de los demandantes denunciaron la flaqueza de las medidas adoptadas por el gobierno peruano para atender a los habitantes de La Oroya (6).

Herculaneum, ciudad del estado de Missouri en Estados Unidos es una ciudad en la que opera una fundición de Doe Run que procesa diversos metales. En agosto de 2011, las empresas Doe Run (Fluor Corp y A.T. Massey Coal), fueron condenadas a pagar 358,5 millones de dólares (38,5 millones como indemnización por la exposición a emisiones atmosféricas de plomo y 320 millones por daños y perjuicios destinados a indemnizar a los habitantes, por daños a su salud resultantes de la contaminación por plomo entre 1986 y 1994. El estado de Missouri reguló que Doe Run eliminara al aire solo medio kilo de plomo por cada tonelada de plomo refinado. (3).

En 2010, Doe Run inició un arbitraje internacional alegando la violación de sus derechos como inversor extranjero garantizados por el Tratado de Libre Comercio entre Perú y Estados Unidos y alegaba ser víctima de trato injusto e inequitativo para reclamar una indemnización por expropiación de 800 millones de dólares. (7). En

2016 la comisión del arbitraje tomó por unanimidad la sabia e histórica medida de rechazar esta demanda (7a). En Marzo de 2012 diputados del Congreso estadounidense instaron al “Departamento de Estado y al Departamento del Tesoro a que se abstuvieran de todo apoyo a la empresa en el procedimiento de arbitraje con base en el TLC con el gobierno de Perú; en su caso el gobierno de Estados Unidos debería exigir a Doe Run la retirada del reclamo.

Con el complejo metalúrgico, La Oroya era calificada como la capital metalúrgica del Perú y Sur América; esa era una de las 4 refinerías más importantes del mundo conjuntamente con Hoboken de Bélgica, Roonskar de Suecia y Dowe Japón (8), y considerada por Blachsmith dentro de las 10 ciudades más contaminadas. La Oroya es la ciudad más contaminada del mundo (9).

Se realizó la presente investigación para determinar la contaminación con el plomo y otras sustancias de la población de la Oroya después de su cierre.



HISTORIA

El Complejo Metalúrgico de Oroya (CMLO) está compuesto de un conjunto de fundiciones y refinerías especialmente diseñadas para refinar los minerales polimetálicos de los Andes Centrales Peruanos: cobre, zinc, plata, plomo, indio, bismuto, oro, selenio, telurio y antimonio y nueve subproductos: sulfato de zinc, sulfato de cobre, ácido sulfúrico, trióxido de arsénico, óleum, bisulfito de sodio, óxido de zinc, polvo de zinc, concentrado de zinc, y extraer de ellos elementos de alto valor como son plata, indio, bismuto y otros. (10). La tecnología utilizada en la [fundición](#) siguen los mismos procesos desde 1922, año de su fundación; desde esa fecha solo se efectuaron modificaciones secundarias (7)

Según el Programa de Adecuación del Medio Ambiente (PAMA), redactado por Centro Min eliminaban tóxicos líquidos sin ningún tratamiento por 40 efluentes al río Mantaro y eliminaban al aire 1000 toneladas de bióxido de azufre, 2500 toneladas de plomo, 2500 toneladas de arsénico, 20 toneladas de cadmio y 20 toneladas de material en partículas, en promedio por día, solamente por la chimenea más alta, 167.50 metros, sin contar los contaminantes tóxicos que eliminaban por las 95 chimeneas pequeñas, el incinerador industrial y el depósito de Malpaso (8); en total los tóxicos eliminados eran de 160,000 toneladas por día (Chuqimantari, 1962). Las concentraciones en el aire de plomo, cadmio, arsénico, bióxido de azufre y otros se incrementaron sustancialmente desde cuando se hizo cargo Doe Run (11); se incrementaron así: plomo 1.163 %, arsénico 606% y cadmio 1990% (12). No solo se incrementaron los metales pesados nombrados sino también los 11 metales y 9 subproductos-

El área afectada por los humos de la Oroya alcanzó la extraordinaria extensión de 700,000 hectáreas alrededor de Oroya, la mejor zona del centro del Perú; oficialmente se reconocen solamente 14, 000 hectáreas (12). Esta ciudad es un laboratorio viviente; sus habitantes están contaminados por la sinergia de metales pesados tóxicos y sus subproductos (13); lo que ocurre con los niños de Oroya es un crimen (14) y una omisión de funciones del gobierno peruano.

La calidad en la toma de muestras y análisis del monitoreo empleado por la empresa es dudosa; no se tiene la certeza que la información reportada al Ministerio de Energía y Minas (MEM) sea precisa, confiable y adecuada; los datos informados al MEM podrían considerarse como una aproximación y estar subvaluados; no son electrónicos ni graficados; todos los parámetros de calidad de aire se deterioraron dramáticamente desde que Doe Run se hizo cargo del complejo (15).

La contaminación generada por La Oroya no solo está circunscrita a esta ciudad, sino que también contamina en forma notable a zonas distantes como a la ciudad de Concepción que está a 100 kilómetros de la Oroya (16). La refinería de La Oroya contaminó también la lluvia, con la producción de la lluvia ácida (Ph 5.6 ó menos) a partir de las 1000 toneladas de bióxido de azufre (SO₂) que producía por día que era la más alta concentración del mundo (17). El 48% de la lluvia que caía en el Valle del



Mantaro era ácida, en Concepción el 98% y en la Oroya era tremendamente ácida: Ph 3.5 a 4.2 (18). El día 13-8-2008 la concentración del SO₂ llegó al límite histórico y espeluznante de 27,000 ug/m³; a los pocos días Blacksmith visitó la Oroya y ese día la concentración del SO₂ fue de 0 (cero) (19); la concentración permitida es 200ug/m³.

INVESTIGACIONES DESPUES QUE DEJO DE FUNCIONAR LA REFINERÍA DE LA OROYA

La investigación de la Universidad de Yale con el complejo paralizado en 2009, determinó que los niveles del plomo en el aire fueron hasta tres veces más elevados que los límites máximos permitidos: asimismo la concentración del dióxido de azufre (SO₂) se excedió en 4500 veces; con respecto al cadmio este metal pesado se excedió en 45% de los registros, y el más alto fue el triple del límite máximo permisible (LMP). La investigación utilizó información proporcionada por Doe Run y el centro médico de La Oroya entre Diciembre de 2009 y Febrero de 2014.

(20-21). La población sigue contaminándose por los gases que eliminan los metales pesados que se encuentran depositados en los suelos.

Las Consultoras 'Ground Water International', 'Science Integrity' y 'Knight Piesold Consulting', a pedido de la estatal Activos Mineros realizaron un magnifico estudio de la magnitud de la contaminación que ha generado el complejo metalúrgico desde el inicio de sus actividades y llegaron a la conclusión que la fundición ha afectado 2700 kms² alrededor de la Oroya especialmente con plomo y arsénico, equivalente al 83% del área de Lima metropolitana; se ha afectado no solo a la provincia de Yauli y La Oroya, sino también a las provincias de Junín, Tarma, Jauja y Concepción; el área más afectada es La Oroya antigua, a más de 2 km al sur. La mayor concentración de metales pesados se halló en los 10 primeros cm. de profundidad de la superficie, e iba disminuyendo su concentración hasta los 80 cm; las consultoras manifiestan que estos metales pesados tóxicos se mantienen inalterables como óxidos e hidróxidos. Hasta 3 kilómetros del complejo el plomo hallado en el suelo estuvo entre 3000 a 16000 ug/kg (7.5 a 40 veces más del límite permitido), y el arsénico, entre 500 a 5700 ug/kg (1.5 a 114 más de lo permitido). El riesgo de cáncer por esta alta concentración del plomo y arsénico es de 2.2 casos por 1000, lo cual es inaceptable. El Comercio escribe que 2,700 km² de suelos alrededor de la Oroya están envenenados por plomo y arsénico (22).

Después de 2009 cuando dejó de funcionar la fundición de La Oroya, se investigaron los niveles de plomo en sangre materna, en la del recién nacido y en la placenta; se hallaron 27.4 ug/dl en la sangre materna, 19 ug/dl en recién nacidos, y 319 ug/100 gm en placentas (23).

Como se ha dicho anteriormente, en 2009 el complejo metalúrgico de La Oroya dejó de funcionar; en los años 2011 al 2015 el Centro de Salud de la Oroya, de la Red de Salud Yauli Oroya, realizó investigaciones de los niveles de plomo en sangre de



niños y de mujeres gestantes, y cuyos resultados están graficadas en las figuras 1, 2, 3 y 4; allí se aprecian concentraciones elevadas de plomo en sangre en niños y de gestantes (24) producidas por la emanación de los gases del plomo acumulado en los suelos de la Oroya e inmediaciones.

Fig.1 NIVELES DE PLOMO EN SANGRE EN MENORES DE 6 AÑOS Y GESTANTES EN LA OROYA 2011

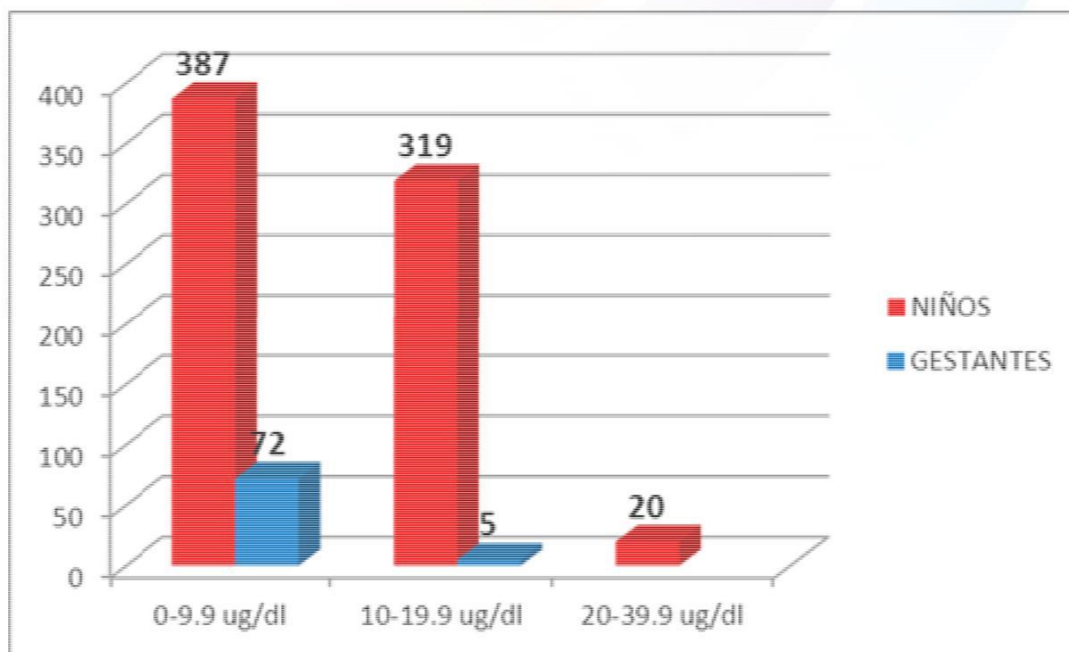


Fig. 2 NIVELES DE PLOMO EN SANGRE EN MENOREAS DE 12 AÑOS Y GESTANTES EN LA OROYA 2013

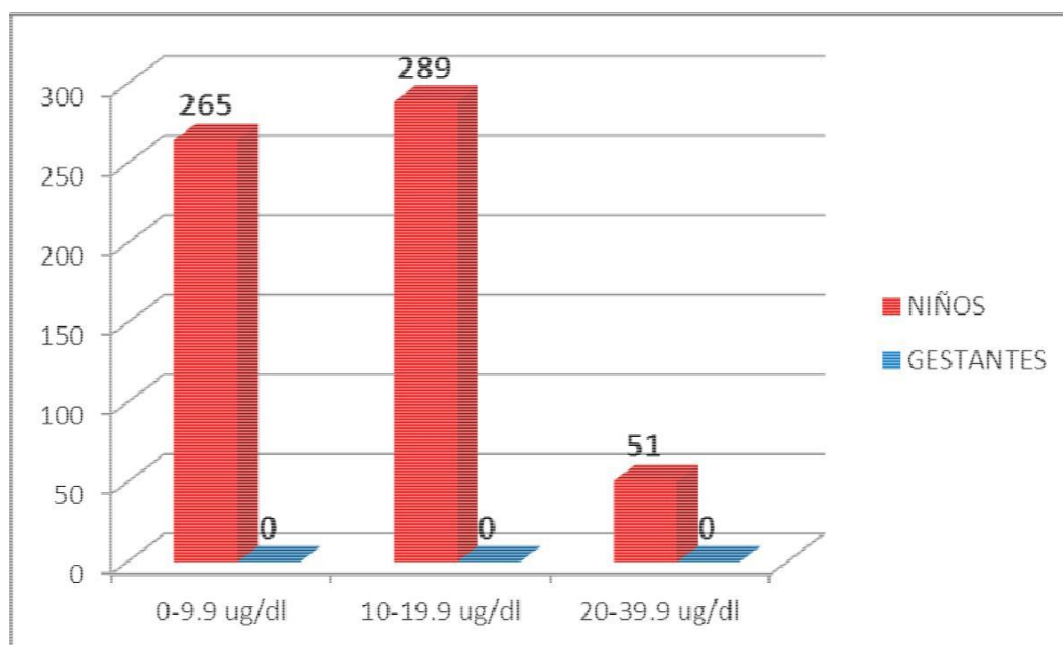




Fig. 3 EN NIÑOS MENORES DE NIVELES DE PLOMO 12 AÑOS Y GESTANTES EN LA OROYA 2014

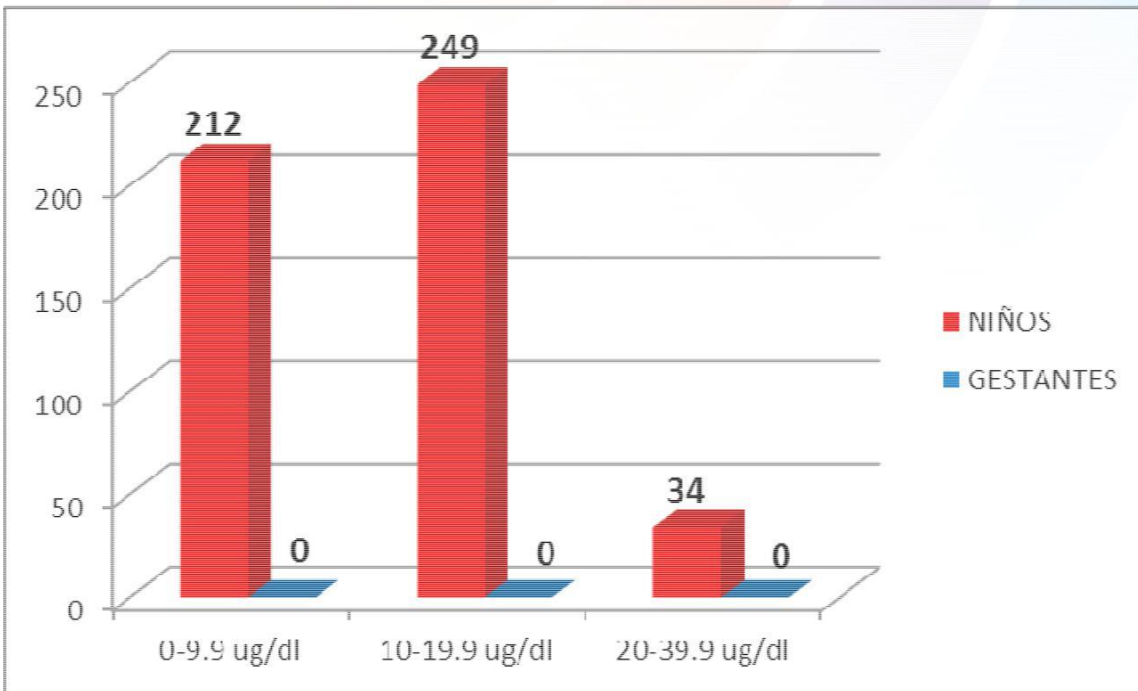
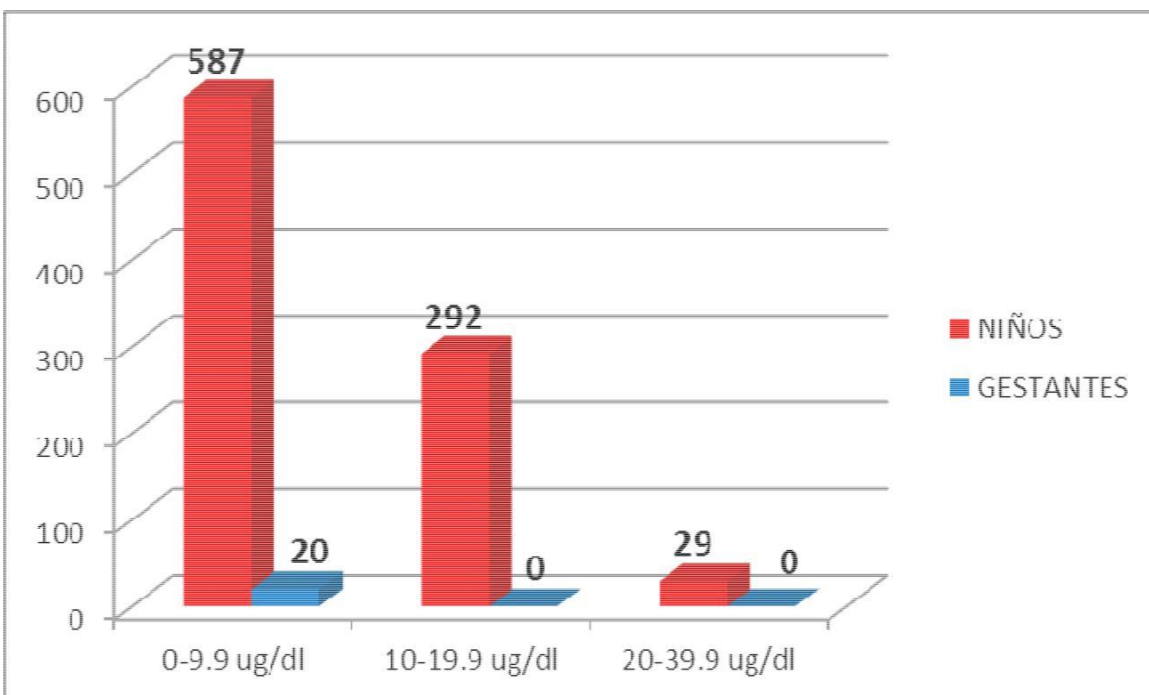


Fig. 4 NIVELES DE PLOMO EN SANGRE DE MENORES DE 12 AÑOS Y GESTANTES EN LA OROYA 2015





CONCLUSIONES

Se reitera que la refinería de La Oroya dejó de funcionar en 2009. Entre los años 2009 y 2014 la Universidad de Yale, de Estados Unidos, realizó estudios en la Oroya utilizando las informaciones de Doe Run y el Centro de Salud de La Oroya y halló que el nivel de plomo en el aire era tres veces más elevado que el límite máximo permisible (LMP); la concentración de bióxido de azufre (SO₂) excedió 4,500 veces el LMP y que la concentración del cadmio se excedió en el 300% del LMP.

Las Consultoras 'Ground Water International', 'Science Integrity' y 'Knight Piesold Consulting', a pedido del gobierno peruano realizaron un magnífico estudio sobre la magnitud de la contaminación que ha generado el complejo metalúrgico desde que inició sus actividades, y llegaron a la conclusión que la fundición ha afectado 2700 km² alrededor de La Oroya, especialmente con plomo y arsénico; no solo a la provincia de Yauli y La Oroya, sino también a las provincias de Junín, Tarma, Jauja y Concepción, La mayor concentración de metales pesados se halló en los 10 primeros cm. de profundidad y en menor cantidad hasta los 80 cm bajo la superficie del suelo; las consultoras manifiestan que estos metales pesados tóxicos se mantienen inalterables como óxidos e hidróxidos. Hasta 3 kilómetros del complejo encontraron plomo en el suelo entre 3000 a 16000 ug/kg (7.5 a 40 veces más del límite permitido), y arsénico entre 500 a 5700 ug/kg (1.5 a 114 más de lo permitido). El riesgo de cáncer por esta alta concentración de plomo y arsénico es de 2.2 casos por 1000, lo cual es inaceptable.

Los habitantes de La Oroya iniciaron su contaminación desde que empezó a funcionar la refinería en 1922; es la ciudad más contaminada del mundo; sus pobladores están contaminados con una mezcla de metales pesados que no se destruyen; es un laboratorio viviente; es un crimen que sufren los niños.

La contaminación ambiental por las mineras puede disminuirse cuando se introduzca una tecnología actualizada en el procesamiento de los minerales y se cumpla el principio universal puesto en vigencia desde 1972 por los países ricos que integran la Organización para la Cooperación y Desarrollo Económico (OCDE): 'EL QUE CONTAMINA PAGA' (25-26).

El estudio realizado por Castro y Cols., en 2013, cuando el complejo había dejado de funcionar hacía ya 4 años, demostró que los niños seguían naciendo contaminados con el plomo, con un 19 ug/dl en la sangre. La Organización Mundial de la Salud (OMS) marca un límite de 10ug/dl de plomo; el Centro de Control de Enfermedades de USA (CDC) publica que el nivel de plomo en la sangre no debe ser mayor de 5 ug/dl (27), y está demostrado que no hay ningún nivel de plomo seguro para la sangre (28). La vida media del plomo en la sangre es de una a dos meses y una vez depositado en el hueso y dientes tiene una vida media de 20 a 30 años (29).



AIDA lleva más de una década trabajando y dando seguimiento a la situación en La Oroya; durante estos años ha podido constatar la gravedad de los daños a la salud de que han sido víctimas los pobladores de La Oroya a causa de la contaminación a la que han estado y continúan estando expuestos por las emanaciones de los tóxicos acumulados en los suelos; el gobierno debe asumir sus obligaciones y cumplir a cabalidad las medidas cautelares de la CIDH, las cuales están vigentes”.

BIBLIOGRAGIA

- 1.- Barja A. Historia de una Villa que Hoy es Gran Ciudad La Oroya. Revista Pluma Digital 2015.
- 2.- RPP Noticias. Doe Run: Una historia de contaminación y acuerdos incumplidos <http://rpp.pe/economia/economia/doe-run-una-historia-de-co>.
- 3.- Mantaro Revive, 20 de noviembre de 2011.
http://elmantarorevive.blogspot.com/2011/12/indecopi-reconoce-doe-run-cayman-como_01.html
- 4.- <http://www.larepublica.pe/03-12-2011/juez-abre-proceso-propietario-de-doe-run-ira-rennert-por-credito-fraudulent0>.
- 5.- Sentencia del Tribunal Constitucional, cf.
<http://www.tc.gob.pe/jurisprudencia/2006/02002-2006-AC.html>
- 6.- Comisión de Derechos Humanos (http://www.aida-americas.org/es/project/laoroya_en y el vídeo de la audiencia: <http://vimeo.com/10469416>
- 7 SERVINDI- Perú: FIDH Presenta Informe sobre La Oroya, una de las Ciudades más Contaminadas del Mundo 2013 [Http://www.servindi.org/actualidad/86904](http://www.servindi.org/actualidad/86904).
- 7a.- Semana Económica.com. El Perú ganó arbitraje a ‘Renco Group’ por caso La Oroya 2016. <http://semanaeconomica.com/article/economia/medio->
- 8.- Programa de Adecuación de Manejo Ambiental (PAMA).Complejo Metalúrgico de la Oroya 1996.
- 9.-Arauzo G- La Oroya la Ciudad más Contaminada del Mundo. Lead Action News 2009;9(2) .
<http://www.connuestroperu.com/actualidad/2097-la-oroya-la-ciudad-mas-contaminada-del-mundo>
- 10.- DOE RUN PERÚ. Operaciones /Complejo Metalúrgico de la Oroya/ Descripción. <http://www.doerun.com.pe/content/pagina.php?plD=90>
- 11.- Garcia C. El Plomo de Doe Run 2005.
www.paginadigital.com.ar/articulos/2005/2005terc/noticias7/intoxicacion-plomo-061205.asp
- 12.- Portugal C, Hurtado W y Aste J. Los Humos de Doe Run. 2003-



- 13.- Pajuelo J. Medio Ambiente y Salud de la Oroya, 2006.
- 14.- Saravia G. Médico Denuncia Contaminación por Metales Pesados y el Estado le hace la Vida Imposible 2015. Idee Revista 2015
<http://www.grufides.org/blog/m-dico-denuncia-contaminacion-por-metales-pesados-y-el-estado-le-hace-la-vida-imposible#sthash.v5L9ptOa.dpuf>
<http://www.grufides.org/blog/m-dico-denuncia-contaminacion-por-metales-pesados-y-el-estado-le-hace-la-vida-imposible>
- 15.- Cederstav A y Baranadiaran A. La Oroya no Espera 2002.
- 16.- Universidad de San Luis de Missouri USA. Estudio Sobre la Contaminación Ambiental de los Hogares de La Oroya y Concepción y sus Efectos en la Salud de sus Residente 2005.
- 17.- NASA.Earth Observing System (EOS) AURA 2006.
http://aura.gsfc.nasa.gov/science/top10_smelter.html:
- 18.- Arauzo G. La Lluvia Acida en el Centro del Perú 2010 http://www.ecoportel.net/Temas-especiales/Contaminacion/la_lluvia_acida_en_el_centro_del_peru http://www.ecoportel.net/Temas-especiales/Contaminacion/la_lluvia_acida_en_el_centro_del_peru
- 19.- El Comercio. La Concentración del SO₂ Llegó a Nivel Histórico y Espeluznante, 2008.
www.elcomercio.com.pe/ediciononline/HTML/2008-08-19/azufre-aire-oroya-supero-niveles-historicos.html
- 20.- Sociedad Peruana de Derecho Ambiental (SPDA). 2016
<http://www.actualidadambiental.pe/?p=18872>
- 21.- CQPPER. CQPPER. La Oroya: Registros de Metales Pesados en el Aire Cuando el Complejo Metalúrgico no Operaba 2016. <http://www.cqpperu.org/noticias/143-la-oroya-registraron-metales-pesados-en-el-aire-cuando-complejo-metalurgico-no-operaba>
- 22.- El Comercio 11-11-2009.
- 23.- Castro J, Chirinos D, Ríos E. Rev. Perú. med. exp. salud pública 2013;30(3).
- 24.- Oscanoa B. Metales Pesados. Centro de Salud de La Oroya Red de Salud Yauli La Oroya Dirección Regional de Junín 2016.
- 25.- Leyva M. Quien Contamina Paga; un Principio de Derecho Internacional
<http://www.monografias.com/trabajos37/quien-contamina-paga/quien-contamina-paga.shtml>
- 26.- García T. Perspectiva Jurídica del Principio Quien Contamina Paga. Dereit 2001;10(1):49.



27.- Centers for Disease Control and Prevention (CDC). Childhood Lead Poisoning Prevention Program 2016. http://www.cdc.gov/nceh/lead/acclpp/blood_lead_levels.htm

28.- Qui J, Wang K, Wu X, et al. Blood Level in Children 0-6 Years Old in Hunan Province, China From 2009-2013. PLOS One 2015;10(4).

29.- Vázquez. E, Maldonado E, Vedagary F, y Col. Intoxicación por Plomo. Reporte de un Caso y Revisión de la Literatura. An Med Asoc Med Hosp ABC 2002;47(1):33.



La Oroya continues being the most polluted city of the world



PHOTO of the Doe Run metallurgical system (lead smelter) in La Oroya, Perú: Oroya ciudad más contaminada del mundo. No mas humo, Carajo! Oroya, the most polluted city in the world. No more smoke, Damnit!

Dr. Godofredo Arauzo Chuco, Médico Cirujano, Ginecólogo Obstetra, Investigador del Medio Ambiente, Master en Medicina, E mail: godo_ara@hotmail.com

Dr. Godofredo Arauzo Chuco, Medical Surgeon, Obstetrician Gynecologist, Environmental Researcher, Masters in Medicine, E mail: godo_ara@hotmail.com

SUMMARY



Goals. This is an investigation of La Oroya, conducted to determine the degree of pollution.

Materials and Methods. The research is the review of the most outstanding literature on this city.

Results. Although the smoke has been removed since 2009, children are still contaminated with lead since newborn: newborn 19.06 ug/dl, children between 2 and 4 years 38.6 ug/dl, children between 2 and 10 years 33.6 ug/dl, children with more than 10 years 29.05 ug/dl, pregnant 39.49 ug/dl, adult men 39.6 ug/dl; lead in the air 27.53 ug/m³, and households lead levels greater than 2000 mg/kg. .

Conclusion. 'La Oroya' metallurgical complex stopped working in 2009, but the people are still contaminated, especially with lead. Besides, water, air, soil and rain have been contaminated, and acid rain has occurred. Despite the complex is not working since 2009, La Oroya remains the most polluted city in the world.

INTRODUCTION

In La Oroya and its surrounding areas there were 5 'haciendas' and 2 rural communities; the development of this city began with the arrival of the railroad in January 1890, the construction of the railway to 'Cerro de Pasco' in 1900-1904, and to Huancayo between 1905 and 1908, the founding of the 'Compañía Mercantil de La Oroya' in 1892 and the construction of the smelter in 1922 by the 'Cerro de Pasco Corporation'.

On 1st January, 1974 the revolution of President Velazco Alvarado nationalized the complex and transferred its management to 'Centro Min Peru'; in 1997, the American company 'Doe Run Perú' acquired at auction the metallurgical complex for 121.5 million dollars. There were then 10000 workers; 'Doe Run' then began the collective redundancies till have only 2500 workers when the complex stopped working in 2009. (1).

By acquiring the refinery, 'Doe Run' promised to comply with the provisions with the 'Program for Environmental Compliance and Management' (PAMA, by its name in Spanish) (2). In 2009 'Doe Run' declared not to have enough capital to purchase minerals that were processed in the complex. The liquidation process (3) was then initiated. The judge of the 39th Criminal Court of Lima initiated criminal proceedings on charges brought by the Prosecutor against the owner of 'Doe Run', Ira Rennert, and its manager, Bruce Neil, for alleged fraud against the State (4). On December 6, 2002, a group of citizens of La Oroya sued the Peruvian government for its inaction to protect the right to health and right to a healthy environment. In the first instance (1st April, 2005) and second instance (11th October, 2005), they decided in favour of the plaintiffs; On May 12th, 2006, the Constitutional Court ordered the government to adopt a series of measures in favour of the inhabitants of La Oroya within 30 days; in addition, the Constitutional Court urged various public entities and private companies, including 'Doe Run', to participate in the necessary actions for the protection of the health of workers at La Oroya, as well as the environment (5). On November 21st, 2005, three 'NGOs', 'Inter-American Association for Environmental



Defence' (AIDA, by its name in Spanish), 'Centre for Human Rights and Environment'-CEDHA, by its name in Spanish-, and 'EarthJustice' requested precautionary measures in favour of the inhabitants of La Oroya to the 'Inter-American Commission on Human Rights'. In March 2010, the 'Inter-American Commission' held a hearing in Washington to discuss the implementation of such precautionary measures; representatives of the applicants complained there about the weakness of the measures taken by the Peruvian government for assisting the inhabitants of La Oroya (6).

Herculaneum, Missouri city in the United States, is a city in which a cast of 'Doe Run' processes several metals. In August 2011, the 'Doe Run' companies Fluor Corp and A.T. Massey Coal, were sentenced to pay 358.5 million dollars (38.5 million as compensation for exposure to air emissions of lead, and 320 million intended to compensate citizens for damages to their health from lead contamination between 1986 and 1994. The state of Missouri ordered that 'Doe Run' released to air only half a kilo of lead per ton of refined lead. (3). In 2010, 'Doe Run' initiated an international arbitration, alleging the violation of its rights as foreign investor, guaranteed by the Free Trade Agreement between Peru and the United States, and claimed to be a victim of unfair and inequitable treatment, claiming a compensation for expropriation of 800 million dollars. (7).

In 2016 the commission of the arbitration took, unanimously, the wise and historic step of rejecting this demand (7a). In March 2012 the U.S. Congress MPs urged the State Department and the Treasury Department to refrain from any support for the company in the arbitration proceedings, based on the F.T.A. with the government of Peru; where appropriate, the U.S. government should require 'Doe Run' the withdrawal of the claim.

The metallurgical complex in La Oroya was rated as the metallurgical capital of Peru and South America; it was one of the 4 major refineries in the world, along with 'Hoboken' in Belgium, Roonskar in Sweden, and Dowe Roonskar in Japan (8), and considered by Blachsmith among the 10 most polluted cities in the world.

This research was performed in order to determine the contamination with lead and other substances to the population after its closing down.

HISTORY

The Metallurgical Complex of La Oroya (CMLO, for its name in Spanish) was composed of a set of smelters and refineries specially designed to refine the polymetallic ores of the Peruvian Central Andes: copper, zinc, silver, lead, indium, bismuth, gold, selenium, tellurium and antimony, and nine sub products: zinc sulphate, copper sulphate, acid sulphate, arsenic trioxide, oleum, sodium bisulphate, zinc oxide, zinc powder, zinc concentrate, in order to extract from them high value elements such as silver, indium, bismuth, and others (10). The technology used in



casting follows the same process since the foundation of the Complex in 1922; since then, only minor modifications (7) were carried out.

According to the Program for Adequacy of the Environment (PAMA, for its name in Spanish), written by 'Centro Min', the toxic liquids were released without treatment through 40 effluents into the Mantaro River, and there were released to the air 1000 tons of sulphur dioxide, 2500 tons of lead, 2500 tons of arsenic, 20 tons of cadmium, and 20 tons of particulate matter, on average per day, only through the highest chimney, 167.5 meters, without the counting of the toxic contaminants that were released through 95 small chimneys, the industrial incinerator and the Malpaso reservoir (8); in total there were 160000 tons of toxics eliminated per day (Chujimantari 1962). The airborne concentrations of lead, cadmium, arsenic, sulphur dioxide and others were increased substantially after 'Doe Run' took over: 1163% lead, 606% arsenic, and 1990% cadmium (12). Not only the above mentioned heavy metals were increased, but also the 11 metals and 9 by products.

The area affected by the fumes of La Oroya reached the extraordinary extension of 7000,000 hectares around Oroya, the best area of central Peru; officially, only 14,000 hectares (12) is the area recognized. The city is a living laboratory; its inhabitants are contaminated by the synergy of toxic heavy metals and their by-products. What happens to children in Oroya is a crime (14) and it's an oversight function of the Peruvian government. The quality sampling and monitoring analysis employed by the company are doubtful; there is no certainty that the information provided to the Ministry of Energy and Mines (MEM, for its name in Spanish) is accurate, reliable and adequate; data given to MEM could be considered as an approximation, and can be undervalued; they are not electronic or graphed data; all the air quality

Parameters had deteriorated dramatically since 'Doe Run' took over the complex (15).

The pollution generated by La Oroya was not only confined to this city, but also it contaminated markedly distant areas as the city of Concepcion which is 100 km from La Oroya (16). The refinery of La Oroya also contaminated the rain with the production of acid rain (pH 5.6 or less) from the 1,000 tons of sulphur dioxide (SO₂) which it produced per day, and that was the highest concentration in the world (17). The 48% of the rain falling in the Mantaro Valley was acidic; in Concepcion 98%, and in La Oroya it was extremely acidic: pH 3.5 to 4.2 (18). In August 2008 (13-08-2008) the SO₂ concentration reached the historical and horrifying limit of 27,000 ug/m³; a few days later Blacksmith visited La Oroya and that day the concentration of SO₂ was 0 (zero) (19); the permitted concentration is 200 ug/m³.

RESEARCH AFTER THE REFINERY LA OROYA STOPPED WORKING

The research conducted by the Yale University in 2009 with the complex already paralysed found that the lead levels in the air were up to three times higher than the



maximum permitted limits; likewise, the concentration of sulphur dioxide (SO₂) was exceeded in 4,500 times; with respect to cadmium, this heavy metal was exceeded in 45% of the records, and the highest value was up to three times the maximum permissible limit (LMP, by the initials in Spanish). The research used information provided by 'Doe Run' and the medical centre of La Oroya between December 2009 and February 2014.

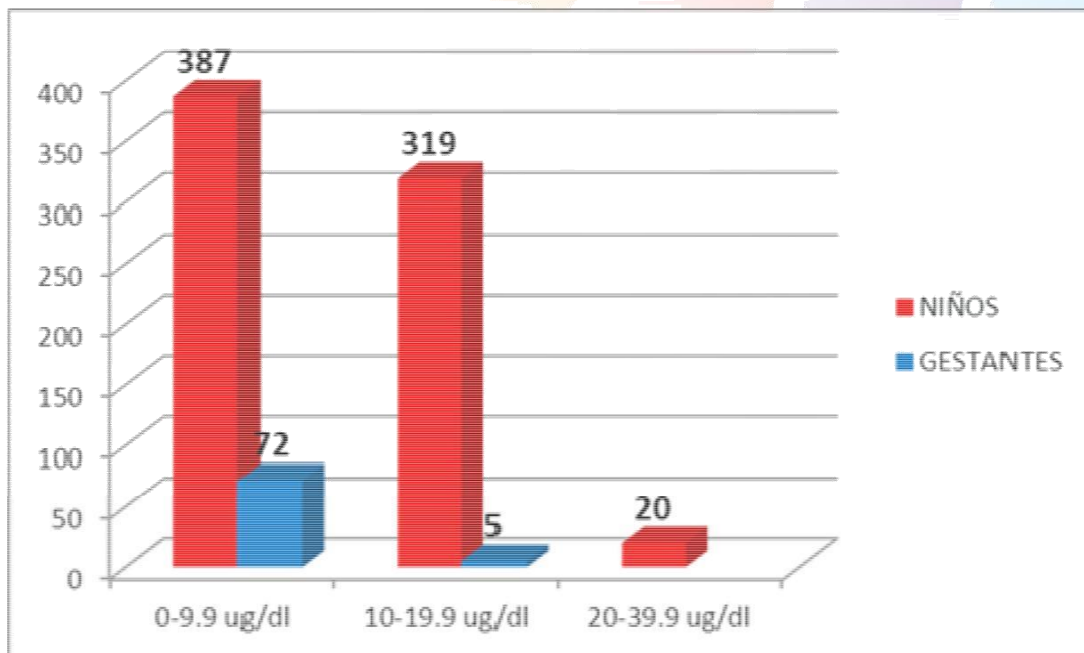
(20-21). The population is still polluted by the gases that were released by the heavy metals that are deposited in the soil. The consultants 'Ground Water International', 'Science Integrity', and 'Knight Piesold Consulting' asked by the state agency 'Activos Mineros' (Activ Miners, in English) have carried out a magnificent study of the extent of the pollution generated by the metallurgical complex since the beginning of its activities, and they have concluded that the foundry has affected 2,700 square km around La Oroya, especially with lead and arsenic, a total area equivalent to the 83% of metropolitan Lima. This has affected not only the province of Yauli and La Oroya, but also the provinces of Junin, Tarma, Jauja and Concepcion. The most affected area is the Old Oroya, more than 2 km to the south. The highest concentration of heavy metals was found in the first 10 cm deep and the concentration decreases till the 80 cm deep. They say that these toxic heavy metals remain unchanged as oxides and hydroxides. Even up to 3 km from the complex there were found lead levels between 3,000 and 16,000 ug/kg (7.5 to 40 times higher than the permitted limit), and arsenic level between 500 and 5,700 ug/kg (1.5 to 114 times higher than the permitted). The risk of cancer from this high concentration of lead and arsenic is 2.2 cases per 100: it is unacceptable. The newspaper 'El Comercio' said that 2,700 km² of land around La Oroya are poisoned by lead and arsenic (22).

After 2009, when the La Oroya smelter ceased operations, lead levels in maternal blood, in newborns and in placentas were investigated; there were found in maternal blood, 27.4 ug/dL, in newborns 19, ug/dL, and in placentas 319 ug/100gm (23).

In 2009 the metallurgical complex of La Oroya stopped working, and in the years 2011 to 2015 the Health Center of La Oroya, belonging to the Health Network Yauli Oroya conducted a research of the lead levels in the blood of children and pregnant women, which are plotted in Figures 1, 2, 3 and 4, where high lead levels can be seen in the blood of children and pregnant women (24) produced by the emanation of gases of lead accumulated in the soils of La Oroya and nearby.

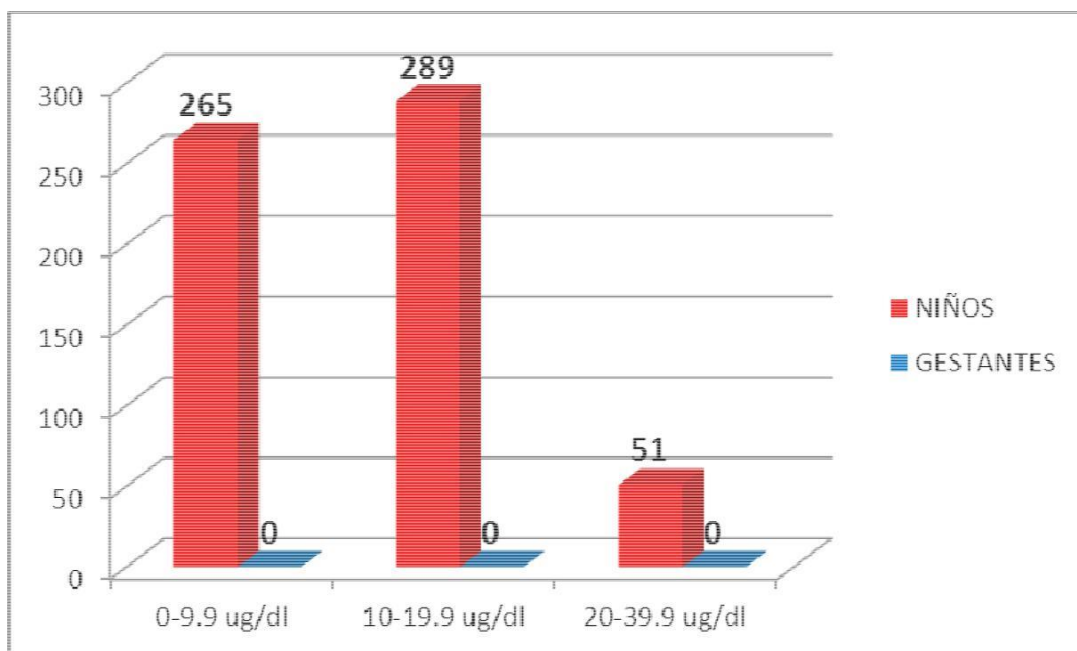


Fig.1 BLOOD LEAD LEVELS IN CHILDREN LESS THAN 6 YEARS AND PREGNANT WOMEN, IN LA OROYA, 2011.



NIÑOS = CHILDREN (in red), GESTANTES = PREGNANT WOMEN (in blue).

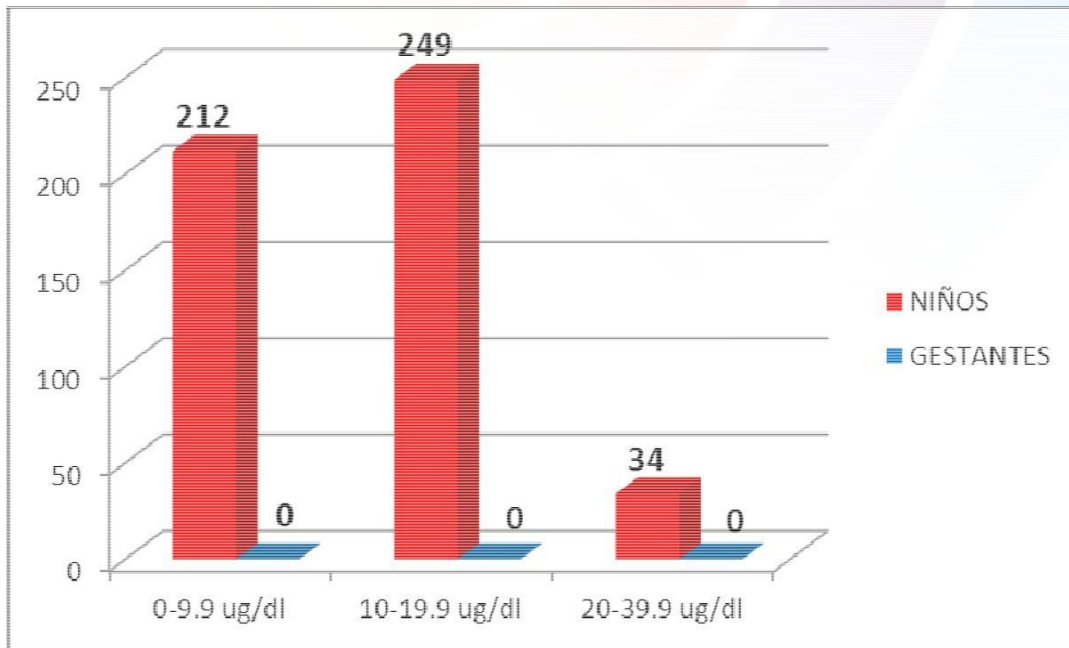
Fig. 2 BLOOD LEAD LEVEL IN CHILDREN LESS THAN 12 YEARS AND PREGNANT WOMEN, IN LA OROYA, 2013.



NIÑOS = CHILDREN (in red), GESTANTES = PREGNANT WOMEN (in blue).

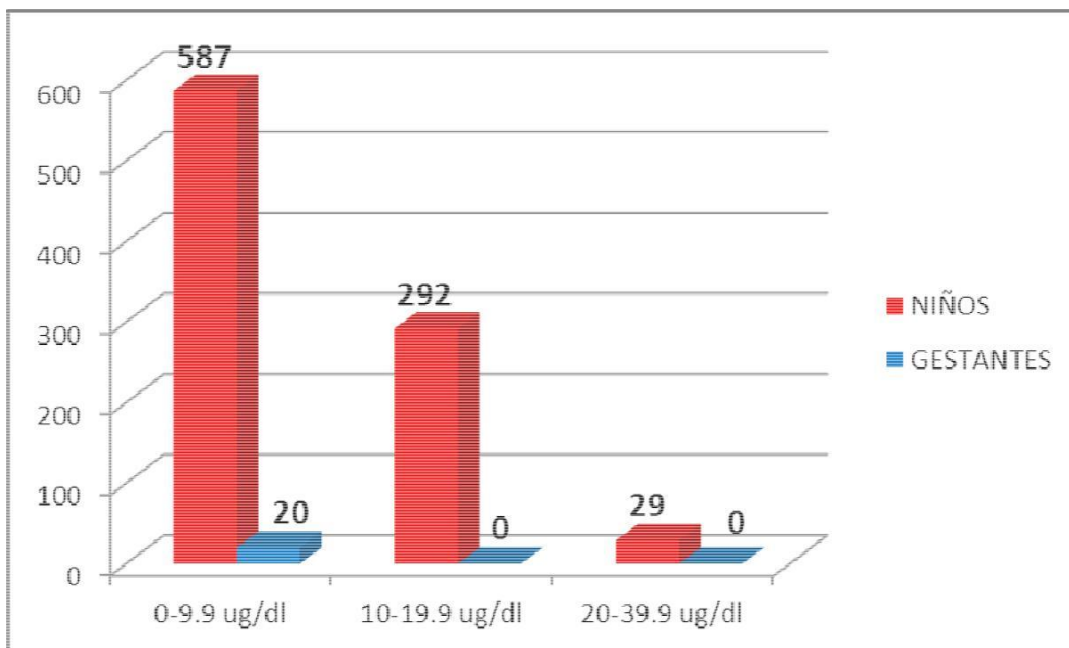


Fig. 3 BLOOD LEAD LEVELS IN CHILDREN LESS THAN 12 YEARS AND IN PREGNANT WOMEN, IN LA OROYA, 2014.



NIÑOS = CHILDREN (in red), GESTANTES = PREGNANT WOMEN (in blue).

Fig.4 BLOOD LEAD LEVELS IN CHILDREN LESS THAN 12 YEARS AND PREGNANT WOMEN, IN LA OROYA, 2015



NIÑOS = CHILDREN (in red), GESTANTES = PREGNANT WOMEN (in blue).



CONCLUSIONS.

It is reiterated that the La Oroya refinery ceased operations in 2009. From 2009 to 2014 the University of Yale in the U.S. studied the Oroya by using information from Doe Run and the Health Centre of La Oroya, and found that the level of lead in the air was three times higher than the allowable maximum limit (LMP, by its initials in Spanish), the concentration of sulphur dioxide (SO₂) exceeded in 4,500 times the LMP, and the concentration of cadmium exceeded 300% that LMP.

The consultants Ground Water International, Science Integrity, and Knight Piesold Consulting, at the request of the Peruvian government, made a magnificent study of the extent of the pollution generated by the metallurgical complex since it began its activities. They have concluded that the Foundry has affected 2,700 km² around La Oroya, especially with lead and arsenic; not only the provinces of Yauli and La Oroya, but also the provinces of Junin, Tarma, Jauja, and Concepcion. The most concentration of heavy metals was found in the first 10 cm deep, and there were lesser amounts of them up to 80 cm from the surface of the soil; and the consultants state that these toxic metals remain unchanged as oxides and hydroxides. Up to 3 km from the resort they found lead in the soil between 3,000 and 16,000 ug/dL (7.5 to 40 times the allowable limit), and arsenic from 500 to 5,700 ug/kg (1.5 to 114 times more than allowed). The risk of cancer by this high concentration of lead and arsenic is 2.2 cases per 1000, which is unacceptable.

The people of La Oroya began their pollution since the refinery began operating, in 1922; it is the most polluted city in the world; its inhabitants are contaminated with a mixture of heavy metals which do not degrade; it is a living laboratory; it is a crime experienced by children. The environment pollution by mining companies can be decreased when it is put into effect an updated technology for mineral processing, and the universal principle put also into effect since 1972 by the countries of the Organization for Economic Cooperation and Development (OECD): THE POLLUTER PAYS (25-26).

The study by Castro and Cols in 2003, when the complex had already been stopped for 4 years, showed that children were being born contaminated with lead: 19 ug/dL. The World Health Organization (WHO) sets a limit of 10 ug/dL of lead. The Centre for Disease Control U.S. (CDC) reports that the level of lead in the blood should not be greater than 5 ug/dL (27), and it is shown that there is no safe level in the blood (28). The average life of lead in the blood is one to two months, and, once deposited in the bones or teeth, it has an average life of 20 to 30 years.

AIDA has spent over a decade working and monitoring the situation in La Oroya; during these years it has seen the gravity of the damage to health that the residents of La Oroya have suffered because of the pollution to which they have been exposed, and still they are, by the fumes of the toxics accumulated in soils; the government must assume its obligations and comply fully with the precautionary measures of the IACHR, which are valid at the moment.



BIBLIOGRAPHY

- 1.- Barja A. Historia de una Villa que Hoy es Gran Ciudad La Oroya. Revista Pluma Digital 2015.
- 1.- Barja A. History of a Villa which is Today The Great City of La Oroya. Magazine 'Pluma Digital' 2015.
- 2.- RPP Noticias. Doe Run: Una historia de contaminación y acuerdos incumplidos <http://rpp.pe/economia/economia/doe-run-una-historia-de-co>.
- 2.- RPP News. Doe Run: A History of pollution and unfulfilled agreements. <http://rpp.pe/economia/economia/doe-run-una-historia-de-co>.
- 3.- Mantaro Revive, 20 de noviembre de 2011. http://elmantarorevive.blogspot.com/2011/12/indecopi-reconoce-doe-run-cayman-como_01.html.
- 3.- Mantaro Revives, November 20, 2011. http://elmantarorevive.blogspot.com/2011/12/indecopi-reconoce-doe-run-cayman-como_01.html.
- 4.- <http://www.larepublica.pe/03-12-2011/juez-abre-proceso-propietario-de-doe-run-ira-renner-por-credito-fraudulento>.
- 5.- Sentencia del Tribunal Constitucional, cf. <http://www.tc.gob.pe/jurisprudencia/2006/02002-2006-AC.html>
- 5.- Constitutional Court Ruling, cf. <http://www.tc.gob.pe/jurisprudencia/2006/02002-2006-AC.html>
- 6.- Comisión de Derechos Humanos (http://www.aida-americas.org/es/project/laoroya_en y el vídeo de la audiencia: <http://vimeo.com/10469416>
- 6.- Human Rights Commission (http://www.aida-americas.org/es/project/laoroya_en and the video of the hearing <http://vimeo.com/10469416>
- 7 SERVINDI- Perú: FIDH Presenta Informe sobre La Oroya, una de las Ciudades más Contaminadas del Mundo 2013 <http://www.servindi.org/actualidad/86904>.
- 7.- SERVINDE- Peru: FIDH Presents Report on La Oroya, one of the most Polluted Cities in the World, 2013. <http://www.servindi.org/actualidad/86904>.
- 7a.- SemanaEconómica.com. El Perú ganó arbitraje a Renco Group por caso La Oroya 2016. <http://semanaeconomica.com/article/economia/medio->
- 7ª.- SemanaEconómica.com. Peru won the arbitration against 'Renco Group' in case of La Oroya, 2016.



8.- Programa de Adecuación de Manejo Ambiental (PAMA). Complejo Metalúrgico de la Oroya 1996.

8.- Environment Management Improvement Program (PAMA, by its initials in Spanish). La Oroya Metallurgical Complex, 1996.

9.- Arauzo G- La Oroya la Ciudad más Contaminada del Mundo. Lead Action News 2009;9(2) .

<http://www.connuestroperu.com/actualidad/2097-la-oroya-la-ciudad-mas-contaminada-del-mundo>.

9.- Arauzo G- La Oroya, the most Polluted City in the World. Lead Action News, 2009; 9(2).

<http://www.connuestroperu.com/actualidad/2097-la-oroya-la-ciudad-mas-contaminada-del-mundo>.

10.- DOE RUN PERÚ. Operaciones /Complejo Metalúrgico de la Oroya/ Descripción. <http://www.doerun.com.pe/content/pagina.php?pid=90>

10.- DOE RUN PERU. Operations/Metallurgical Complex of La Oroya/ Description.

<http://www.doerun.com.pe/content/pagina.php?pid=90>

11.- García C. El Plomo de Doe Run 2005.

www.paginadigital.com.ar/articulos/2005/2005terc/noticias7/intoxicacion-plomo-061205.asp

11.- García C. Doe Run's Lead, 2005.

www.paginadigital.com.ar/articulos/2005/2005terc/noticias7/intoxicacion-plomo-061205.asp

12.- Portugal C, Hurtado W y Aste J. Los Humos de Doe Run. 2003-

12.- Portugal C, Hurtado W and Aste J. The Doe Run's fumes, 2003.

13.- Pajuelo J. Medio Ambiente y Salud de la Oroya, 2006.

13.- Pajuelo J. Environment and Health of La Oroya, 2006.

14.- Saravia G. Médico Denuncia Contaminación por Metales Pesados y el Estado le hace la Vida Imposible 2015. Idee Revista 2015

<http://www.grufides.org/blog/m-dico-denuncia-contaminacion-por-metales-pesados-y-el-estado-le-hace-la-vida-imposible#sthash.v5L9ptOa.dpuf>

<http://www.grufides.org/blog/m-dico-denuncia-contaminacion-por-metales-pesados-y-el-estado-le-hace-la-vida-imposible>.

14.- Saravia G. A Doctor Reports Heavy Metal Pollution and the state makes his life impossible, 2015.

15.- Cederstav A y Baranadiaran A. La Oroya no Espera 2002.



- 15.- Cederstav A and Baranadiaran A. La Oroya does not wait, 2002.
- 16.- Universidad de San Luis de Missouri USA. Estudio Sobre la Contaminación Ambiental de los Hogares de La Oroya y Concepción y sus Efectos en la Salud de sus Residente 2005.
- 16.- University of St. Louis, Missouri, U.S.A. A study of the Environmental Pollution of the Households of La Oroya and Concepcion, and its effects on the health of their residents, 2005.
- 17.- NASA.Earth Observing System (EOS) AURA 2006.
http://www.aura.gsfc.nasa.gov/science/top10_smelter.
- 17.- NASA.Earth Observing System (EOS) AURA 2006.
http://www.aura.gsfc.nasa.gov/science/top10_smelter.
- 18.- Arauzo G. La Lluvia Acida en el C entro del Perú 2010 http://www.ecoportel.net/Temas-especiales/Contaminacion/la_lluvia_acida_en_el_centro_del_peru)http://www.ecoportel.net/Temas-especiales/Contaminacion/la_lluvia_acida_en_el_centro_del_peru.
- 18.- Arauzo G. The Acid Rain in Central Peru, 2010. http://www.ecoportel.net/Temas-especiales/Contaminacion/la_lluvia_acida_en_el_centro_del_peru)http://www.ecoportel.net/Temas-especiales/Contaminacion/la_lluvia_acida_en_el_centro_del_peru.
- 19.- El Comercio. La Concentración del SO2 Llegó a Nivel Histórico y Espeluznante, 2008.
www.elcomercio.com.pe/ediciononline/HTML/2008-08-19/azufre-aire-oroya-supero-niveles-historicos.html
- 19.- El Comercio. The Concentration of SO2 reached an historical, horrifying level, 2008.
www.elcomercio.com.pe/ediciononline/HTML/2008-08-19/azufre-aire-oroya-supero-niveles-historicos.html
- 20.- Sociedad Peruana de Derecho Ambiental (SPDA). 2016
<http://www.actualidadambiental.pe/?p=18872>
- 20.- Peruvian Society for the Environmental Law, 2016.
<http://www.actualidadambiental.pe/?p=18872>
- 21.- CQPPER. CQPPER. La Oroya: Registros de Metales Pesados en el Aire Cuando el Complejo Metalúrgico no Operaba 2016. <http://www.cqpperu.org/noticias/143-la-oroya-registraron-metales-pesados-en-el-aire-cuando-complejo-metalurgico-no-operaba>)
- 21.- COPPER. COPPER. La Oroya: Records of Heavy Metals in the Air When the Metallurgical Complex didn't work, 2016. <http://www.cqpperu.org/noticias/143-la-oroya-registraron-metales-pesados-en-el-aire-cuando-complejo-metalurgico-no-operaba>)
- 22.- El Comercio 11-11-2009.
- 23.- Castro J, Chirinos D, Ríos E. Rev. Perú. med. exp. salud pública 2013;30(3).

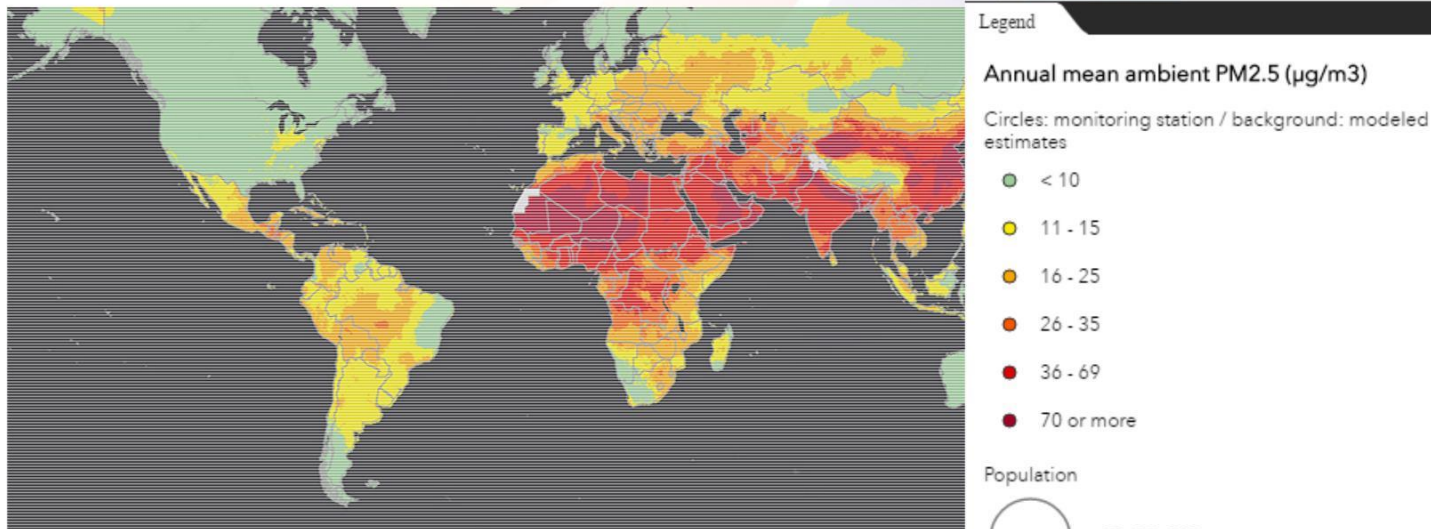


- 23.- Castro J, Chirinos D, Ríos E. Rev. Perú. med. exp. Public Health, 2013;30(3).
- 24.- Oscanoa B. Metales Pesados. Centro de Salud de La Oroya Red de Salud Yauli La Oroya Dirección Regional de Junín 2016.
- 24.- Oscanoa B. Heavy Metals. Health Center La Oroya, Health Network Yauli La Oroya, Junin Regional Management, 2016.
- 25.- Leyva M. Quien Contamina Paga; un Principio de Derecho Internacional
<http://www.monografias.com/trabajos37/quien-contamina-paga/quien-contamina-paga.shtml>
- 25.- Leyva M. Polluter Pays; a Principle of International Law.
<http://www.monografias.com/trabajos37/quien-contamina-paga/quien-contamina-paga.shtml>
- 26.- Garcia T. Perspectiva Jurídica del Principio Quien Contamina Paga. Dereito 2001; 10(1):49.
- 26.- García T. Legal Perspectives of the 'Polluter Pays' principle. Dereito 2001; 10(1):49.
- 27.- Centers for Disease Control and Prevention (CDC). Childhood Lead Poisoning Prevention Program 2016. http://www.cdc.gov/nceh/lead/acclpp/blood_lead_levels.htm
- 28.- Qui J, Wang K, Wu X, et al. Blood Level in Children 0-6 Years Old in Hunan Province, China From 2009-2013. PLOS One 2015;10(4).
- 29.- Vazquez. E, Maldonado E, Vedagary F,y Col. Intoxicación por Plomo. Reporte de un Caso y Revisión de la Literatura. An Med Asoc Med Hosp ABC 2002;47(1):33.
- 29.- Vazquez E, Maldonado E, Vedagary F, and Col. Lead Poisoning. Case Report and Review of Literature. An Med Asoc Med Hosp ABC 2002;47(1):33.
-



Most of the world's population breathes dirty air

Explore the interactive map at <http://maps.who.int/airpollution/>



Legend units: Annual mean ambient PM_{2.5} (µg/m³) - particulate matter of diameter less than 2.5 micrometres (PM_{2.5}). WHO guideline limits for annual mean of PM_{2.5} are 10 µg/m³



A new WHO air quality model confirms that 92% of the world's population lives in places where air quality levels exceed WHO limits. The new data represents the most detailed outdoor

air pollution-related health data, by country, ever reported by WHO. Information is presented via an interactive map, highlighting areas

New interactive maps highlight areas within countries that exceed WHO air quality limits

27 September 2016 GENEVA - A new WHO air quality model confirms that 92% of the world's population lives in places where air quality levels exceed WHO limits*. Information is presented via interactive maps, highlighting areas within countries that exceed WHO limits.

"The new WHO model shows countries where the air pollution danger spots are, and provides a baseline for monitoring progress in combatting it," says Dr Flavia Bustreo, Assistant Director General at WHO.

It also represents the most detailed outdoor (or ambient) air pollution-related health data, by country, ever reported by WHO. The model is based on data derived from satellite



measurements, air transport models and ground station monitors for more than 3000 locations, both rural and urban. It was developed by WHO in collaboration with the University of Bath, United Kingdom.

Air pollution's toll on human health

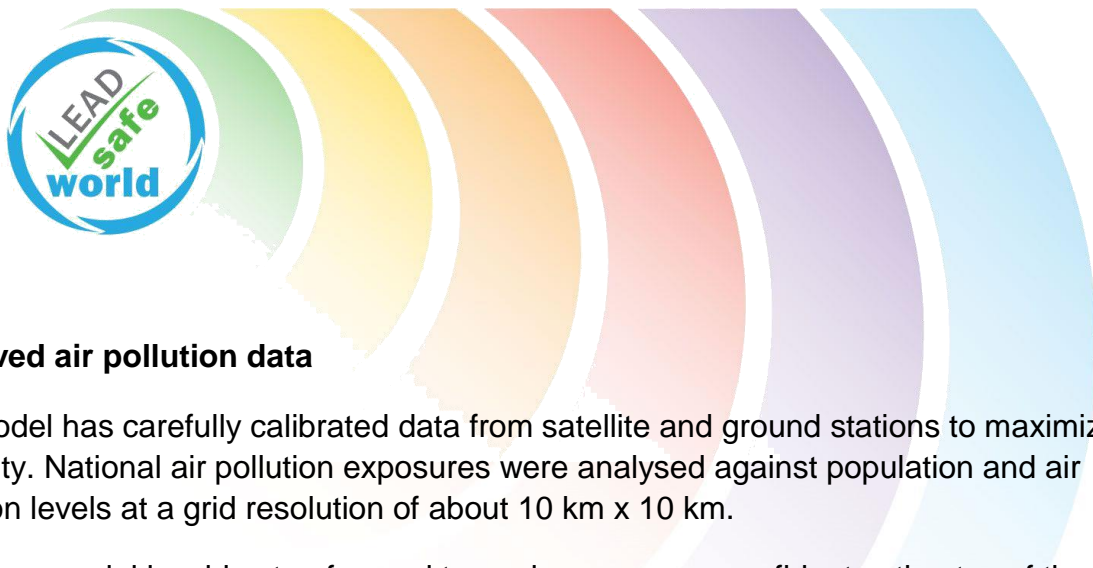
Some 3 million deaths a year are linked to exposure to outdoor air pollution. Indoor air pollution can be just as deadly. In 2012, an estimated 6.5 million deaths (11.6% of all global deaths) were associated with indoor and outdoor air pollution together.

Nearly 90% of air-pollution-related deaths occur in low- and middle-income countries, with nearly 2 out of 3 occurring in WHO's South-East Asia and Western Pacific regions.

Ninety-four per cent are due to noncommunicable diseases – notably cardiovascular diseases, stroke, chronic obstructive pulmonary disease and lung cancer. Air pollution also increases the risks for acute respiratory infections.

"Air pollution continues take a toll on the health of the most vulnerable populations – women, children and the older adults," adds Dr Bustreo. "For people to be healthy, they must breathe clean air from their first breath to their last."

Major sources of air pollution include inefficient modes of transport, household fuel and waste burning, coal-fired power plants, and industrial activities. However, not all air pollution originates from human activity. For example, air quality can also be influenced by dust storms, particularly in regions close to deserts.



Improved air pollution data

The model has carefully calibrated data from satellite and ground stations to maximize reliability. National air pollution exposures were analysed against population and air pollution levels at a grid resolution of about 10 km x 10 km.

"This new model is a big step forward towards even more confident estimates of the huge global burden of more than 6 million deaths – 1 in 9 of total global deaths – from exposure to indoor and outdoor air pollution," said Dr Maria Neira, WHO Director, Department of Public Health, Environmental and Social Determinants of Health. "More and more cities are monitoring air pollution now, satellite data is more comprehensive, and we are getting better at refining the related health estimates."

Interactive maps

The interactive maps provide information on population-weighted exposure to particulate matter of an aerodynamic diameter of less than 2.5 micrometres (PM_{2.5}) for all countries. The map also indicates data on monitoring stations for PM₁₀ and PM_{2.5} values for about 3000 cities and towns.

"Fast action to tackle air pollution can't come soon enough," adds Dr Neira. "Solutions exist with sustainable transport in cities, solid waste management, access to clean household fuels and cook-stoves, as well as renewable energies and industrial emissions reductions."

New road map for action on air pollution

In September 2015, world leaders set a target within the Sustainable Development Goals of substantially reducing the number of deaths and illnesses from air pollution by 2030.

In May 2016, WHO approved a new "road map" for accelerated action on air pollution and its causes. The roadmap calls upon the health sector to increase monitoring of air pollution locally, assess the health impacts, and to assume a greater leadership role in national policies that affect air pollution.

*** WHO Ambient Air Quality Guidelines**

WHO air quality model confirms that 92% of the world's population lives in places where air quality levels exceed "WHO's Ambient Air quality guidelines" for annual mean of particulate matter with a diameter of less than 2.5 micrometres (PM_{2.5}). WHO guideline limits for annual mean of PM_{2.5} are 10 µg/m³ annual mean.

PM_{2.5} includes pollutants such as sulfate, nitrates and black carbon, which penetrate deep into the lungs and in the cardiovascular system, posing the greatest risks to human health.



BreatheLife air pollution campaign

This fall WHO is rolling out BreatheLife, a global communications campaign to increase public awareness of air pollution as a major health and climate risk. BreatheLife is led by WHO in partnership with the United Nations Environment Programme (UNEP)-hosted Climate and Clean Air Coalition to Reduce Short-lived Climate Pollutants. The campaign stresses both the practical policy measures that cities can implement (such as better housing, transport, waste, and energy systems) and measures people can take as communities or individuals (for example, to stop waste burning, promote green spaces and walking/cycling) to improve our air.

[Learn more about Breathe Life 2030](#)

Copyright © 2016 World Health Organization (WHO)

Tips & Facts: Lead is a significant component of fine particulate matter

The above World Health Organization media release can be contextualised in relation to the lead content of particulate matter (PM) or fine lead particles in air pollution, with the following connections:

tips and
FACTS



can
to

the

According to Brook et al in Particulate Matter Air Pollution and Cardiovascular Disease An Update to the Scientific Statement From the American Heart Association (Circulation, June 2010):

“Combustion PM is composed of many chemical compounds, including organic carbon species, elemental or black carbon, and trace metals (eg, lead and arsenic).”
As stated by Elizabeth O’Brien and Anne Roberts in Lead abatement and greenhouse gas abatement go well together (in LEAD Action News, vol 9 no 4 <http://www.lead.org.au/lanv9n4/lanv9n4-3.html>):

“The simple truth is: all combustion creates some lead pollution, because lead is ubiquitous in the environment. All combustion also creates a range of toxic air pollution, and combustion of solid fuels creates contaminated ash and other contaminated solid waste. Here we are only listing the leaded pollution from combustion.



“Lead occurs naturally in soils and rocks so the largest source of non-anthropogenic lead air pollution is volcanic activity. According to the San Diego State University Department of Geological Sciences: “Volcanic eruptions can enhance global warming by adding CO₂ to the atmosphere. However, a far greater amount of CO₂ is contributed to the atmosphere by human activities each year than by volcanic eruptions.” “

Here’s some facts about lead (Pb) emissions from the combustion of coal.

Lead Toxicity & Climate Change: Carbon Combustion Power

[GW&CV Loss → Pb mgt Loss– Quadrant 4 of the GRID]

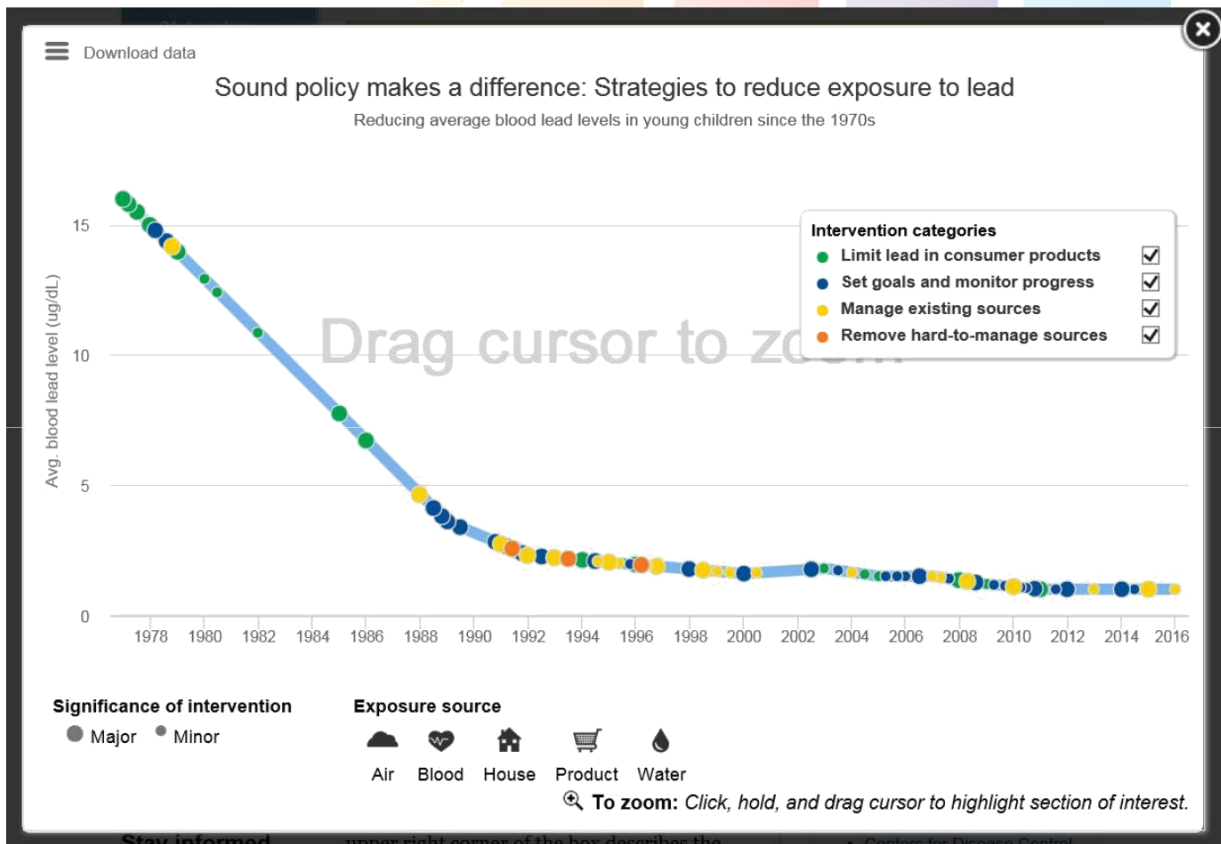


- Coal fired power can provide >12-45% of lead emissions
- Over 17m tons of lead deposited in fly ash in US 2000-2006
- Coal emissions 41% of CO₂ (2005) but 77% of SO₂ (2000)
- Overall impact on warming neutral or negative, little black carbon
- Natural gas moderate CO₂, little SO₂ or Pb; large fugitive emissions
- Oil high CO₂, significant black carbon, SO₂ & Pb
- Biomass combustion produces black carbon & Pb

SLIDE 17: Lead Toxicity & Climate Change: Carbon Combustion Power, (http://www.lead.org.au/bb1p/Climate_Change/sld017.htm) from Lead Toxicity & Climate Change [conference Powerpoint presentation] by Ian Smith; Elizabeth O'Brien; Robert Taylor; Venkatesh Thuppil. Presented at CLIMATE CHANGE: HEALTH AND ENVIRONMENTAL IMPACTS OF CHEMICALS SDPI (Sustainable Development Policy Institute) 12TH Sustainable Development Conference, 21-23 Dec 2009, Islamabad, Pakistan. http://www.lead.org.au/bb1p/Climate_Change/Lead_Climate_Change_20091222.ppt

EDF Lead Policy Tool - 40 years of sound US policy

The Environmental Defense Fund (EDF) USA have created a **Lead Policy Tool - Interactive chart** (that looks like the graph below but is interactive), showing Forty years of sound policy. “Sound policy has an impact but millions are still at risk [of lead exposure in the US].”



Graph of child blood lead levels in the USA from 1976 to 2016 with each green, blue, yellow or red dot representing a US lead policy which has resulted in lowering of blood lead levels. www.edf.org/leadpolicytool

Editor's note: The Environmental Defense Fund is brilliant! US lead poisoning prevention advocates are brilliant! And US regulators have done a great job keeping up with all that brilliant advocacy! Go USA! Every country showing PM2.5 levels above the WHO Limit on the world map above, could take a leaf out of the USA's lead management book.



Here's an email from Tom Neltner of EDF about the Lead Policy Tool:

Have you ever wanted to find a single place to track down a federal actions regarding lead poisoning prevention? If so, check out our new infographic at www.edf.org/leadpolicytool

We created it not only to show that sound policy helps reduce children's exposure to lead but to help people find these policies more easily.

We identified 82 policy actions, rated them as major or minor, grouped them by: sources (air, blood, house, product or water); agency; and four types of interventions (limit in consumer products, set goals and monitor progress, manage existing sources, and remove hard to manage sources). You can zoom in specific time periods and hover on a dot to get more information and follow a link to get more information. If you want the spreadsheet, click on the "hamburger" in the upper-left corner to download the data.

If you want to suggest adding a policy we missed, add a new one, or clarify, please contact EDF via www.edf.org/contact

Tom Neltner, 9th September 2016

The LEAD Group's objection to proposed Ingleburn Lead Acid Battery "Recycling" Facility

[URL: See The LEAD Group's submission at http://www.majorprojects.planning.nsw.gov.au/?action=view_submission&job_id=7195&submission_id=163029 - Submitted 16th September 2016. See all submissions at



http://www.majorprojects.planning.nsw.gov.au/?action=list_submissions&job_id=7195]

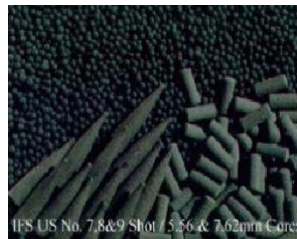
LEAD Group Objections to Ingleburn Battery "Recycling" Facility:

- as proposed, the Ledox Australia lead battery plant at Ingleburn NSW is a used lead acid battery (ULAB) **breaking** plant, and not a ULAB **recycling** plant;



- Australia is a signatory to the Basel Convention which requires that hazardous waste such as the waste to be produced by the proposed Ingleburn plant is recycled within Australia, not exported as proposed;
- ULAB-breaking/**battery-breaking is the most dangerous part of the ULAB collection and recycling process;**
- the proposal aims to allow air lead concentrations likely to result in blood lead levels of workers higher than the current NSW Workcover limit, which is higher than the proposed Australian national limit and nearly 6 times higher than the current Californian occupational blood lead limit;
- 6-8 lead poisoned young workers in Western Sydney at any one time is way too many to add to what is already the state's worst Area Health Service for blood lead notifications;
- young workers are the most at-risk of long-term health impacts of lead exposure including to their reproductive capacity. Lead exposure causes reduced sperm count, sperm mutations, infertility, miscarriage and reduced IQ in offspring;
- as well as potentially allowing toxic air emissions via open doors, the proposed Ledox plant will contaminate large volumes of drinking water with heavy metals and increase waste going to landfill and waste-processing facilities, as well as creating many more truck movements (with resulting diesel emissions, noise pollution and increased accident-risk in an area with nearby residences, school, childcare, etc) than have been proposed by Ledox if the plant actually runs at the proposed throughputs;
- the proposed 30,000 L acid tank external to the existing building poses a potential risk of contamination to groundwater in the case of tank failure.

Yours Sincerely
Elizabeth O'Brien
Winner of the United Nations
Association of Australia (UNAA) Award
Outstanding Service to the
Environment
Lead Advisor, The LEAD Group Inc
(lead poisoning prevention charity)



for

Volcano Art Prize (VAP) 2016 Entry. Title:
Leaded ammo, ewaste and used lead acid battery. **Lead-safety message: Recycle toxic lead waste safely! Never let it contaminate soil or be licked or ingested by animals.** Photographer: Peter Hurley. URL: <http://volcanoartprize.com/wp-content/uploads/2016/06/Hurley-Peter-leaded-ammo-ewaste-and-used-lead-acid-battery.jpg>



Remediator #7, July 2016: globalCARE

Can't view this email, please [view online](#) | [To unsubscribe click here.](#)



Forward →



*A safer, cleaner
environmental future*

eNewsletter

13 July 2016

On the move

I'm delighted to report substantial progress in our plans to build a **globalCARE™** as a worldwide scientific and industry alliance which aims to cleanse the planet from the estimated 250Gt of human emissions produced each year (see item 7, below).

Following a successful launch of **globalCARE** at the CleanUp 2015 Conference in Melbourne last September, our alliance has now grown to embrace four continents. Major participants have joined **globalCARE** from China, India, Europe and Canada as well as the United States and Australasia.

China CleanUp



In China, very strong support has been expressed by leading scientists and universities for the goals of **globalCARE**. With [4400 people now dying daily from air pollution alone](#), China is facing a massive task to clean up its air, water, food, soils and cities – a task it is tackling with immense energy and



commitment. The Government clearly recognises that economic and social sustainability, as well as population health, depend on this issue, and endorses the importance of building both the human and technological capacity to defeat widespread contamination. We held meetings in Beijing in October 2015 at which we introduced **globalCARE**, staged an exhibition showcasing clean-up companies and technologies, and conducted workshops on contamination and the latest ways of dealing with it. To build on these efforts, CRC CARE will be hosting the first [CleanUp China Conference](#) in October this year.

Indian action

Likewise, in India, there is surging public awareness of the problems posed by industrial and agricultural pollution of air, water, soil and food – and an emerging strong determination by state and federal governments to tackle it. Reports that snow on Mt Everest is now too contaminated to drink due to industrial heavy metal fallout and 1.4 million deaths a year from air pollution put the challenges facing India in perspective. In October 2015 and March 2016, **globalCARE** met with Indian scientific, government and industry leaders and non-government organisations at meetings hosted by Tamil Nadu Agricultural University where we introduced international contamination experts and consultants.

The first CleanUp India, a major conference focussing on key contamination threats in the subcontinent and their potential solutions, is scheduled for December 2016.

Thailand

2017 is earmarked for a major CleanUp Conference in Thailand, where we will introduce the concept of **globalCARE** and focus on Thai contamination issues and their solutions.

Australasia and the world



CleanUp 2017, the 7th International Contaminated Site Remediation Conference, will take place in Melbourne, Australia, in September 2017.

These conferences have now been running since 2005 and have attracted progressively larger audiences of international scientists, industry leaders and clean-up companies. At CleanUp 2015, 700 people registered and attended. The conference covered 43 themes across 66 sessions. A total of 356 papers were received, of which 241 were presented in oral sessions and 64 in the poster session. The [official proceedings](#) are publicly available for free.

Capacity is key

Contamination problems are largest and most serious for newly industrialised and developing countries, which often lack the skills and technologies required to prevent contamination at source or clean it up as it occurs. As a result, the 'dirty model' of national development has come to be accepted as the international norm, and citizens of countries who are rapidly growing their economies, cities and industries often pay a high price in health and wellbeing for the flood of toxic contaminants that results from ill-planned industrial expansion.

globalCARE argues that the dirty model of development ought to be as much a thing of the past as the industrial horrors of 19th century Europe and America, especially as we now have extensive, advanced science and technologies at our fingertips to prevent them. We propose that the world instead adopts a 'clean model' of development, whereby contaminants are anticipated and dealt with at source, materials recycled and waste is minimised.

A key part of this strategy will involve our speaking to the governments around the world about the issue, assisting them to develop better policies and access better technologies and advice, and above all to grow



their local capacity to beat contamination by training the coming generation of clean-up specialists.

globalCARE sees as a primary role for itself and its members as being the development of worldwide capacity and technical skills to prevent and eliminate contamination of all types.

Why we're here...



Photo:

www.flickr.com/photos/fredr

While climate change continues to dominate the media headlines, most people (and governments) fail to realise that carbon contamination is only a smallish fraction – about 20 per cent – of total human chemical emissions, intentional and unintended. These emissions amount to in excess of 250 billion tonnes a year – possibly far more. This vast outpouring of potentially toxic substances is still the unseen part of the iceberg of human impacts on the plane. **globalCARE** aspires to awaken the world to its risks, as well as the opportunities for new industries, enterprises and jobs.

The impacts of climate change – floods, droughts, fires and food price spikes – tend to be episodic. They afflict part of the population at infrequent intervals.

Toxic contamination is different. Pollutants like heavy metals, and durable chemicals (such as the organophosphates) tend to build up in the environment in which we live, year by year. This happens so slowly that we hardly notice their impact until there is a major disease outbreak – such as the current pandemic in childhood developmental and brain disorders (e.g. autism and ADHD), which many researchers now link to factors such as endocrine-disrupting substances and air pollution. This cumulative ‘planetary loading’ by contaminants is of the highest concern.

The World Health Organization estimates that around [12.6 million people now die annually from contaminants](#) in their living environment – almost one human in every four – and this may already be the largest cause of premature death and disability worldwide. Since these chemicals disperse globally in air, water, food, soil, wildlife, people and traded goods, it is probable that no person on the planet is



unaffected. This is an issue deserving of at least the same urgency and priority as climate change, and of summits like the recent Paris climate talks.

The mission of **globalCARE** is to contain and ultimately defeat the risk that contaminants pose to the future of humanity, the Earth, its systems and all life on it.

Please join us.

With best wishes,

Ravi Naidu

Professor Ravi Naidu

CEO and Managing Director CRC CARE

Global Innovation Chair, Global Centre for Environmental Remediation, University of Newcastle

Convener, **globalCARE**





Drinking water lead contamination flows on

By Paul Harvey, doctoral student, Macquarie University, Sydney NSW Australia

When you wake up in the morning and prepare your breakfast, what do you do? Do you flush your taps for three minutes to remove the water that has been sitting in your pipes overnight? Do you run your water through a filter? Despite advice from NSW Health, chances are you don't do either of these two things. But, I hear you ask, what is the point of flushing your taps? Did you know that your taps and household plumbing can be contributing lead and other contaminants to your drinking water? Oh, you didn't? Don't worry, you're not alone!

New research published this month in the *Journal of Environmental Research* by researchers, Paul Harvey, Dr Heather Handley and Prof Mark Taylor from Macquarie University show that household taps, fittings and fixtures are contributing to elevated lead concentrations in drinking water 'at the kitchen tap'.

"The results of this study demonstrate that along with other potential sources of contamination in households, plumbing products that contain up to 2.84 per cent of detectable lead are contributing to contamination of household drinking water," said lead author Paul Harvey.

The study that examined the first draw water samples from approximately 200 first draw water samples from across the regional NSW area found that 51% of samples contained a detection of lead.

"Lead was particularly notable, with 8% of samples containing above the Australian Drinking Water Guideline concentration of lead in water (10 cg/L)," says Harvey.

But to some, the problem of lead corrosion in plumbing systems is not news. Work conducted by Gulson and others in urban environments has shown that these contaminants appear regularly in the water.

So what can be done about it? The advice to flush taps for periods of time was examined in the study. It was noted that in those tests, the concentrations of lead in water did not always decrease. Recent work by Katner et al. (2016) comments on the 'myth' that has been propagated globally from health departments to industry that flushing your taps will help to remove contaminants. It is now understood that flushing is not a suitable fix to the problem.

Where do we head from here? The only real solution to removing lead from drinking water is to first remove lead from the (brass) fittings and fixtures that provide potable water in



the home. This is a regulatory level response that will directly prevent manufacturers from including lead in the manufacturing process. In addition to this, regulations should be implemented to prevent the use of lead in any infrastructure used, or potentially used, in the drinking water catchment (e.g. a roof).

The study demonstrates that lead is still a pervasive problem in Australian drinking water and one which requires remedy to mitigate this preventable exposure pathway.

REFERENCES

- HARVEY, P. J., HANDLEY, H. K. & TAYLOR, M. P. 2016. Widespread copper and lead contamination of household drinking water, New South Wales, Australia. *Environmental Research*, 151, 275-285.
- KATNER, A., PIEPER, K. J., LAMBRINIDOU, Y., BROWN, K., HU, C.-Y., MIELKE, H. W. & EDWARDS, M. A. 2016. Weaknesses in Federal Drinking Water Regulations and Public Health Policies That Impede Lead Poisoning Prevention and Environmental Justice. *Environmental Justice*.

Lead: a modern day problem in plumbed rainwater

Could the pump or ball valve be adding lead to our rainwater?

By a LEAD Group Kit Purchaser (Name withheld)

A few years ago we moved to a fast growing area of Australia. We were pleased to buy a house that was only a couple of years old. It had met our main criteria - needing no renovations. Having young children, asbestos and lead paint had been problems we wanted to avoid. We were really excited because our new home contained solar panels and four rainwater tanks that pumped what we thought was pure water into our house.



2012 Volcano Art Prize (VAP) Entry. Title: Water must not contain lead. **LEAD SAFETY Message: Lead-contaminated water remains a major problem.** Description of Work/Materials: Digital photo. Artist/Photographer: Alejandro Casas Palomino.



<http://volcanoartprize.com/portfolio-item/water-must-not-contain-lead/>

Not long after moving in we experienced gastroenteritis and I also noticed a bad odour when the water was stagnant for a couple of days. This smell cleared after running the water for a day. We installed an all-house filtration system downstream from the pump to prevent further episodes of gastroenteritis. The filters consisted of three cartridges, 1 micron, 5 micron, and odour (carbon) filter and a UV light to kill parasites, bacteria and viruses. In this region of the world, where a lot of people have grown up on rainwater, this was considered to go above and beyond what most tank owners do. However, we have young children and wanted to protect them.

Despite this the bad odour returned when the water was left standing and after another bout of diarrhoea we again read through the state's health guidelines for rainwater tanks. It went into some detail about disinfection and desludging the tank every 2-3 years. We had our tanks desludged by a professional contractor (who told us that our tanks really didn't appear to be very dirty). We then chlorinated the tanks. The odour problem was still not fixed when we went away for a weekend, but by now I was the only one who felt that the smell came from the water and that it was odd. The neighbours and other locals didn't seem to notice the smell and the water tasted fine.



Volcano Art Prize (VAP) Entry 2014. Title: Lead Needs My Attention for My

Daughter's Sake. **Lead-safety Message: Following this Skype session with Elizabeth O'Brien of The LEAD Group, I will use a LEAD Group kit to have soil, paint, dust and water analysed at the lab, then I'll follow the kit report clean-up recommendations, so my daughter is never lead poisoned at our inner city terrace house.** Materials: film of Skype session. Artist: Justin Lloyd. Screen Capture Editor: Rocky Yiru Huang. Watch the film at: <http://volcanoartprize.com/portfolio-item/lead-needs-my-attention-for-my-daughters-sake-video/>

Not convinced, we had a plumber come out, he scratched his head, called and discussed the problem with colleagues, looked for cross-connections, however, felt this would be highly unlikely, and then to his credit suggested that the next time we went away we should get the water tested to see if there indeed was any problem. We had previously had the water tested for E.coli. The result had been good. However, we did as the plumber had suggested and after being away on a holiday took a sample for microbial collection. We also decided to check for heavy metals as there was a rusty colour to the water, which did eventually flush out.

We were devastated when the results came back, as the lead levels were very high, exceeding the Australian Drinking Water Guidelines (ADWG). We contacted the plumber who assured us that there should be no lead in our household plumbing. He came out and looked at each component of plumbing in particular the pump, and the copper pipe going into our house and explained that solder should not be allowed to contain lead. He was in fact shocked and really couldn't explain the problem. He was surprised when it was suggested that the internal fittings themselves would have brass in them and might be contributing to the problem. We contacted the Environmental Health Officer at the the local council, who tried to help, but referred us to the state health authority. The State's Local Environmental Health Officer trivialised the matter and was unable to help us. The Regional Environmental Health Officer suggested that my children have blood lead tests if we were concerned, and his advice was to flush each tap for three minutes before drinking



it. I told him that we had all stopped drinking the water, anyway. I asked if anyone could help us identify the problem and he stated that unless my children had elevated blood lead levels (ie. met their criteria for lead poisoning) they wouldn't do anything. I was prepared to pay someone to assess the problem as I had no idea of how to remedy the situation.

From plumbers to plumbing suppliers and at every level of government there seemed to be a lack of understanding of the serious nature of lead in drinking water and of what could be done to rectify the situation. When this degree of ignorance exists, it is not surprising that consumers are unaware that they should be taking some responsibility for the quality of their drinking water. Their fittings should meet Australian standards and be watermarked. Plumbers should only be supplying fittings that are marked for potable water. In this day and age, a heavy metal like lead should no longer be at levels that are detectable in drinking water (lead levels should be below 0.001mg/L - milligrams per litre) and they certainly should not be at the levels of the ADWG (0.010mg/L).

We started to feel really isolated and vulnerable and were left unable to drink our tainted water. It was then that I contacted Elizabeth O'Brien from The LEAD Group, who has helped immensely. She also suggested we all have blood lead levels. She went through the process of taking further samples to isolate the problem as well as providing literature and places to turn for further help. We also spoke to Paul Harvey from Macquarie University who again has been a wealth of knowledge on the subject of water chemistry and heavy metals.

With the systematic approach suggested by Elizabeth O'Brien and Paul Harvey and after testing the water with two independent National Association of Testing Authorities (NATA) accredited labs, (using The LEAD Group Kits) we have isolated the problem to our pump complex. This consists of two ball valves and the pump, which when sitting for even short periods of time leaches heavy metals. These include nickel and lead in excess of the ADWG. We are continuing to have independent tests done to resolve the problem.



2016 VAP Entry. Title: SAL is a Lead Safe World Partner, Lead-safety Message: Sydney Analytical Laboratories (SAL) supports lead-safety in Australia by testing lead and other heavy metals in eggs, paint, water, dust, soil, toys, jewellery, etc and asbestos in building materials via LEAD Group Kits.

Materials/Photographer: Photos from Sydney Analytical Laboratories, collaged using Word and Paint.



<http://volcanoartprize.com/portfolio-item/sal-is-a-lead-safe-world-partner/>

It came as a surprise to a lot of people that the pump or a commonly used ball valve might contain lead. However, lead is always added to brass to make the brass easier to machine. A lot of wetted plumbing components contain brass. The content of lead varies in these components, (especially when the brass is recycled) and this can be particularly problematic when there is a combination of high quality soft (unbuffered) rainwater sitting in pumps, pipes and taps as this can corrode the metal and leach lead. I have been told the problem can be exacerbated with plastic or plastic lined tanks, as concrete tanks contain calcium carbonate (lime) that acts as a buffer to harden the water. People with metal tanks also may have harder water, unless they have a plastic liner. Therefore it is particularly important to ensure that the pH and hardness is controlled if your tank is plastic. This is not an isolated or unknown problem. However, the lack of understanding and ignorance of the problem is common where I live - a place where hundreds of new houses are built every year, accompanied by plastic rainwater tanks. Indeed it was news to us.

My children all have had blood lead tests, and no matter what the numbers show it is heartbreaking to think that every time I gave them a home cooked meal, made their lunches, washed their fruit or told them to drink a glass of water, I was dosing them with lead (a dose which is much higher than background lead water levels). The World Health Organisation says there is no safe threshold of lead, and indeed studies continue to be published to show that very low levels of lead over a period of time cause learning problems and reduced IQ, these problems persist into the future. We can't turn back time. All we can do now is prevent further unnecessary lead exposures from happening. Talking to the laboratories in my own town it became apparent that it is rare for a tank owner to request heavy metal testing. There is a complacency amongst tank owners and a belief that if you are drinking water from the sky, you are drinking the best water available. However in several studies this has been proven not always to be the case. If you are on your own water supply you should be checking the water quality, and this includes for common heavy metals such as copper and lead, (you can't see, smell or taste lead in water).



I urge all people who own rainwater tanks to contact a NATA accredited lab for testing, or to get in contact with The LEAD Group for a sampling kit. Good quality drinking water is achievable and should be available to everybody no matter where you live.

US turmeric and curry powders recalled for excess lead

By Tom Tarantelli

I have read the recent Australian report of Choice Magazine regarding oregano. [See <https://www.choice.com.au/food-and-drink/groceries/herbs-and-spices/articles/oregano-fraud> (7 of 12 samples tested "contained ingredients other than oregano, including olive leaves (in all seven samples) and sumac leaves (in two samples). Ingredients other than oregano made up between 50% and 90% of the adulterated samples.")]

I imagine that all spices including turmeric would experience the same amount of food fraud.

Turmeric has been reported adulterated with lead chromate, yellow earth (yellow iron oxide), yellow clay, industrial dyes, etc.

New York State Department of Agriculture and Markets, is recalling a spice mix (Jamaican Curry Powder) for excessive lead: see <http://www.agriculture.ny.gov/AD/alert.asp?ReleaseID=1088>

Lead was ~35 ppm (parts per million), Chromium was high as well, Indian chromate test was positive. Therefore high lead is result of lead chromate. Chromate contains hexavalent chromium.

Here's what OSHA (US - Occupational Safety and Health Administration) has to say about hex chrome:

"Hexavalent chromium (Cr(VI)) is a toxic form of the element chromium. Hexavalent chromium is rarely found in nature and is generally man-made. Cr(VI) is widely used in pigments, metal finishing (electroplating), wood preservatives and fungicides, and in chemical synthesis as an ingredient and catalyst."

Also recently recalled by New York State:

July 22, 2016 Food Safety Alert Gel Spice, Inc. Issues Alert on Elevated Lead Levels in One Lot of Fresh Finds Ground Turmeric Powder. The Alert





includes: “New York State Department of Agriculture and Markets ... today alerted consumers to a concern for elevated levels of lead in Blue Mountain brand “Jamaican Curry Powder,” packaged and distributed by Eve Sales Corporation ...New York.”

See <http://www.agriculture.ny.gov/AD/alert.asp?ReleaseID=1090>

and the same product recall notice by the US FDA....

Gel Spice, Inc. Issues Alert on Elevated Lead Levels in One Lot of Fresh Finds Ground Turmeric Powder - <http://www.fda.gov/Safety/Recalls/ucm513844.htm>

“Company Announcement:

When a company announces a recall, market withdrawal, or safety alert, the FDA posts the company's announcement as a public service. FDA does not endorse either the product or the company.

Gel Spice, Inc. is recalling one lot of Fresh Finds Ground Turmeric Powder because the product contains elevated lead levels.

The product was distributed at Big Lots Stores throughout the United States.

Routine sampling by New York State Department of Agriculture and Markets’ food inspectors and subsequent analysis of the product by the New York State Food Laboratory revealed the elevated level of lead.

Consumers who have purchased “Fresh Finds Ground Turmeric” should discard the product.

Lead was 54.1 ppm, Chromium was 16.9 ppm, Indian chromate test was positive. Therefore high lead is result of lead chromate, a yellow industrial pigment. Chromate contains hexavalent chromium, which is toxic.

Do Australians use much turmeric?

Ethnic groups that eat a curry spice diet would consume quite a bit of turmeric.

http://www.sciencepub.net/newyork/0205/04_0773_taskeen_manuscript1_ny0205.pdf

Also, there’s an interesting online training program called: Population effects of turmeric consumption on pediatric blood lead levels, which includes a poster. See <https://apha.confex.com/apha/141am/webprogram/Paper286083.html>

The poster includes:



Prior Evidence

- Identification of Pb chromate, a potential adulterant, at turmeric manufacturing plants in India (source of 97% of US turmeric)
- Recalls of 4 US turmeric brands due to “excessive” Pb levels (Spice Hunter, Archer Farms, Pran, Dr. Clark Supplement)
- Reports of Pb poisoning following spice consumption from 4 health depts. across the US (AZ, CO, CT, CA)
- Identification of spices as the source of Pb exposure in case reports of clinical lead poisoning among children, adults and pregnant women.

Next Steps

Our next steps include investigation of additional pathways of turmeric consumption, such as supplements and beverages, which we have found to contain up to 18.3 g of turmeric.



Lead Safety and Home Remodelling

By Courtni Wisenbaker-Scheel. Photos reprinted with permission from Modernize.com



It's safe to say that most people now understand that lead causes serious health problems for both humans and the environment. However, not everyone knows just how much toxic lead can be lurking within their ceilings and walls in the form of dust. It's not until a construction project begins and the dust starts flying that the danger really grows. At [Home Improvement Leads](#), we want you to understand the importance of lead safety when you are remodeling your home.

What homes are likely to have toxic lead?

With the passage of Toxic Substances Control Act of 1976 and the Residential Lead-Based Paint Hazard Reduction Act of 1992, it became mandatory in the US for companies to report what chemicals and mixtures were in their products as well as restricting the use of those substances known to be toxic. For generations, lead was a common additive in construction materials because it was cheap and easy to use. It's safe to say that if your home was built prior to 1978, then there is almost certainly lead somewhere in your home.



However, age alone is not the only indicator. Lead dust can settle on and in your home and also be tracked inside from soil contaminated by industrial pollution, coal- and wood-burning, older car exhaust, etc.



What needs to happen before renovations begin?

In general, lead dust poses little threat to your family's health when it is left undisturbed. However, once mallets start swinging and saws start cutting, that isn't going to be the case. If your home was built before 1978, save yourself the worry and hire a [certified lead-safe renovation expert](#) to perform the job from the start. Otherwise, consider having a lead dust sampling technician come to your home to test what lead levels are in your ceiling void dust and wall cavity dust. Then you will know what precautions need to be taken.

How should lead dust be removed?

One of the first steps that needs to be taken is to have the area completely sealed off from the rest of the house with plastic sheeting. This includes restricting entry and exit paths for anyone working in the construction zone so that no dust accidentally enters the home from someone's clothes. Especially before dismantling a ceiling or even breaking into a ceiling to



install lights, fans, sunroof/skylights, etc, have a certified professional come remove roof tiles or sheets and then the ceiling void dust using an approved HEPA filter vacuum. We don't recommend you do this removal yourself, because training and experience are required to take the appropriate steps to ensure safety protocols are followed. This includes using the proper NIOSH-certified respirator that is fitted with HEPA filters, washing all protective clothing separately, and thoroughly cleaning exposed skin before entering the rest of the home. Also, it should be noted that all pets, children, pregnant women, elderly individuals, or people with a compromised immune system should vacate the home while these renovations take place, just to further ensure their safety.

Renovations are potentially dangerous in their own right, so don't add to the risks by ignoring lingering lead in your home. Follow the correct protocol and you'll have a beautiful and safe new home in no time.

ADVERTISEMENT



www.HomeImprovementLeads.com – brings homeowners together with high-quality qualified remodeling contractors. Home Improvement Leads specialize in window, siding, HVAC, roofing, and solar leads, and offer the best in home improvement contractor leads.

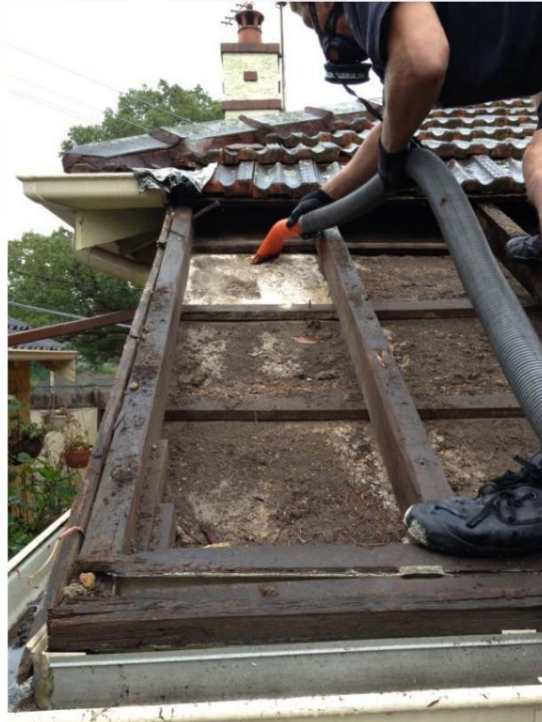


Australian Dust Removalists Association (ADRA) AGM notice



The Australian Dust Removalists Association (ADRA) Inc. announces ADRA Annual General Meeting, at on Monday 10th October 2016 at offices of Insulvac in Leichhardt, Sydney, NSW. ADRA Members all welcome! Ph 02 9716 0014 to to join the Association.

www.adra.com.au



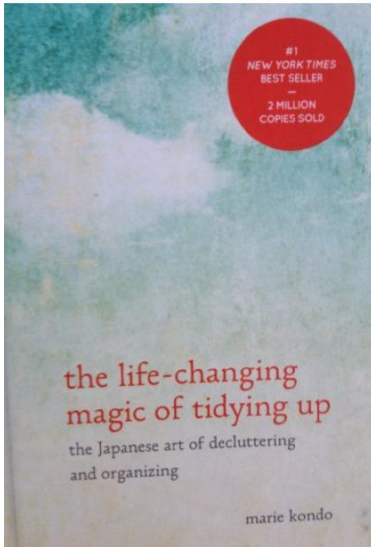
the
10am
the
apply

PHOTO: Volcano Art Prize (VAP) 2015 Entry. Title: Ceiling dust removal by Insulvac in Sydney (part of slide show). **Lead-safety Message: Vacuuming of ceiling dust by an Australian Dust Removalists Association (ADRA) Member Company is a must before ceiling demolition.** Photographer: Richard Jones, Kaleidoscope NSW.
<http://volcanoartprize.com/portfolio-item/ceiling-dust-removal-by-insulvac-in-sydney-slide-show/>



Quotable Quotes: Dust & Detox Quotes from The life-changing magic of tidying up

By Marie Kondo, books and excerpts available at <http://tidyingup.com/>



“...”

“When we put our house in order, the air inside becomes fresh and clean. Reducing the amount of stuff in our space also reduces the amount of dust, and we actually clean more often. When we can see the floor, the dirt stands out and we want to clean. Because clutter has been eliminated, it’s much easier to clean and therefore we do it more thoroughly. The fresher air in the room must certainly be good for the skin. Cleaning involves energetic movement, which would naturally contribute to losing weight and staying fit. And when our space is completely clean, we don’t have to worry about tidying, so

we are free to focus on the next issue that is important in our lives.”...

“It’s a very strange phenomenon, but when we reduce what we own and essentially “detox” our house, it has a detox effect on our bodies as well. When we discard everything in one go... our bodies may respond in a way that resembles a short fast.”



Lead Archiving Volunteer Opportunity



There's a Librarian Internship / Archiving Opportunity at The LEAD Group's office. If you have some time and some Library Acquisition or Data-Entry skills that you'd like to put to good use, The LEAD Group's files have recently returned to our office in Summer Hill in Sydney, with the closure of CTI Consultants' Concord office and warehouse. We are extremely grateful to Fred Salome and Carol Bodle for storing our huge library for over 14 years, free-of-charge.



Now we just need to sort the wheat from the chaff and get the "keepers" scanned (if not found online) and placed in our MS SQL Database. If you can volunteer, please phone Elizabeth on 9716 0014.

Lead poisoning of free-living birds in Esperance

By Dr Rupert Woods, Manager, Australian Wildlife Health Network, P.O. Box 20, Mosman NSW

Introduction

Lead intoxication, associated with atmospheric lead carbonate, was the cause of a mass mortality of primarily nectivorous and insectivorous birds (wattle birds, honeyeaters and miners) at Esperance in Western Australia in early December 2006. The incident raised the importance of wildlife acting as indicators for human health and the critical need for cooperation between the various National



and State/Territory agencies involved in responding. It is concluded that although encouraging and enterprising research and policy initiatives are occurring in wildlife health in Australia, such activities, taking into account Australia's unique wildlife and organisational structure, could benefit from improved co-ordination, better commitment to collaboration and to integration of wildlife surveillance into the existing arrangements.

Key words: lead carbonate, wild birds, Esperance, mass mortality.

Case report

Lead intoxication, associated with atmospheric lead carbonate, was the cause of a mass mortality of primarily insectivorous and insectivorous birds (wattle birds, honeyeaters and miners) at Esperance in Western Australia.

Dead and dying birds were first noticed in early December 2006. A number of dying birds were seen convulsing prior to death. The number of deaths during December (2006) - January (2007) was confirmed at 400 - 500. However, the total number of deaths was subsequently extrapolated to 4000 - 5000. Initial necropsies were unhelpful with no gross abnormalities detected. Differential diagnoses included infectious processes and intoxication. Avian influenza, virulent Newcastle disease and West Nile virus were excluded. Tests for toxic blue green algae in local ponds were negative and no organo-chlorines, organo-phosphates or pyrethroid pesticides were detected in tissue samples. Testing of tissue samples and the presence of characteristic lead inclusion bodies in the kidneys of dead birds indicated that at least a proportion of the estimated 4000 - 5000 wild birds died from lead poisoning. A second episode occurred in early March (2007) when 150 birds mostly purple-crowned lorikeets died. Tests on tissue samples from ten of these birds were also found to have significant lead levels (11 - 98 mg/kg wet weight).

Results of leaf, flower stamen and bird feather tests also showed high lead and nickel levels. Large tonnages of lead carbonate mined at Wiluna were being exported via the port at Esperance. Isotope fingerprinting on samples taken in Esperance matched the lead in the samples of material transported into and out of the town. Marine sedimentary samples, collected from the seabed directly under the Esperance Port Authority's discharge pipe, also returned very high lead and nickel levels. Australian guidelines for sediment lead levels are 50 - 220 mg/kg and the Esperance marine samples showed lead levels between 3,600 - 29,000 mg/kg. Similarly, guidelines for sediment nickel levels are 21 - 52 mg/kg and the marine sediments had levels of 660 - 5,900 mg/kg.

A full investigation by the Environmental Enforcement Unit (EEU) and a comprehensive health and ecological risk assessment occurred as a result of the findings of lead intoxication. The investigation included blood testing of Esperance community members and environmental sampling (water, rainwater tanks, soil). The Western Australian Department of Health advised people not to drink water from rainwater tanks until the tanks had been tested for lead, emptied and cleaned. It was also recommended that consumption of shellfish and crustaceans taken from the area should be avoided. Lead carbonate export from the port was suspended.

As a result of this event, a parliamentary inquiry was held by the Western Australian Government (Education and Health Committee 2007).



Discussion

Communication, prior preparation and identification of roles and responsibilities are crucial in any response and to better manage wildlife mortality events, an integrated response plan, where roles and responsibilities are clearly outlined, is required in each of Australia's States and Territories (including Departments of Agriculture, Health and Conservation). It is important to identify funding resources in line with jurisdictional responsibilities. However, there needs to be recognition of the need to manage incidents beyond jurisdictional boundaries and the identification of strategies, responsibilities and sources of resources to deliver. Laboratory issues particularly associated with funding and prioritization need to be addressed to allow the confirmation of a diagnosis. There is also a need to better integrate wildlife samples with mainstream agricultural sample management.

To improve the capability of recognizing emerging and emergency wildlife diseases better national surveillance systems are needed, as well as better integration and sharing of information. Australia needs to recognise more and more the need for meaningful collaboration between organisations and government departments. There is a need for close consultation, collaboration and commitment to develop among environment, human health and agriculture organisations.

Conclusion

The event raises the importance of wildlife acting as indicators for human health and the critical need for cooperation between the various National and State/Territory agencies in responding to incidents such as this. It is concluded that although encouraging and enterprising research and policy initiatives are occurring in wildlife health in Australia, such activities, taking into account Australia's unique wildlife and organisational structure, could benefit from continuing to improve co-ordination, better commitment to collaboration and to integration of wildlife surveillance into the existing arrangements.

References

Education and Health Committee - Report, Inquiry into the cause and extent of lead pollution in the Esperance area - 06-09-2007. url

www.parliament.wa.gov.au/web/newwebparl.nsf/iframewebpages/Committees+-+Inquiries

Accessed 18 Mar 2010.



Volcano Art Prize 2016 Entries – each ready for your Lead Safe World Poster!

We're very proud to present here the 78 entries in Volcano Art Prize (VAP) 2016.

An excellent action you can take for the fourth International Lead Poisoning Prevention Week of Action (23rd-29th October 2016) is to order a Lead Safe World Poster at www.lead safeworld.com/shop and have it displayed at your GP or vet clinic, childcare centre, school, university, workplace, gun club or at home 'cos you like the picture! Any VAP Entry can be made into a poster! Even the ones from VAP 2012 to 2015 at <http://volcanoartprize.com/vap-archive/> and the following 10 webpages.

With your creative input to Volcano Art Prize 2017, eventually we'll have a Lead Safety Poster for every situation. Be inspired by the examples here which are already up and on



display, spreading the word!

These Lead-Safety Poster URLs:

1. Test for lead and other heavy metals with a LEAD Group Kit before you buy property For Sale Sign slide - <http://volcanoartprize.com/portfolio-item/entropy-1/>
2. The most important lead test at any age, is a blood lead test - ask your doctor <http://volcanoartprize.com/portfolio-item/our-children-heading-for-a-lead-free-society/>
3. You can test for many possible sources of lead in a pet's environment with a LEAD Group lab kit <http://volcanoartprize.com/portfolio-item/dont-let-animals-health-go-down-like-a-lead-balloon/>
4. Be lead-safe when you grow your own food!
Marrickville Council Sustainability Grant Poster - www.lead safeworld.com/product/lead safeworld-poster/

If you'd like to order any entry from VAP 2016 (or earlier VAPs) to be made into a colour A3 laminated Lead Safe World Poster, please order and pay \$15 at www.lead safeworld.com/shop and then copy the URL for the entry so you can paste it into the Order Notes section at Checkout. The Poster will make an excellent gift for family, friends to take to their GP or vet clinic, school, childcare centre, etc.



Artist's Name: Harla, Harry & Carla
Title of Image: Don't Let Animals
Health Go Down Like a Lead Balloon
Lead-Safety Message: You can test
for many possible sources of lead in a
pet's environment with a LEAD Group
lab kit

Materials: Oil paint on canvas

URL:

<http://volcanoartprize.com/portfolio-item/dont-let-animals-health-go-down-like-a-lead-balloon/>



Artist's Name: **Meredith Knight**

Title of Image: Cooks River Earlwood

Lead-Safety Message: **Ensure only**

Class 5 PCCP-Accredited
Contractors manage the old
industrial coatings on
infrastructure in your area.

Materials: iPhone photos of Cooks
River, Earlwood, NSW Australia

URL:

<http://volcanoartprize.com/portfolio-item/cooks-river-earlwood/>



Artist's Name: Sue Gee

Title of Image: Tara

Lead-safety Message: **Get yourself
and pets checked for lead
poisoning.**

Materials: Samsung Galaxy smart phone
photo

URL:

<http://volcanoartprize.com/portfolio-item/tara/>



James with a mixed tucker bag. He was my best friend and helper at Aurukun.

Artist/Photographer: Dr Michael Hindmarsh

Title of Image: Aurukun shooter with spoonbills & barramundi mixed tucker bag. Notice: Mr James Kalkyorta (pictured here) is deceased. Lead-safety Message: Australian hunters take care not to eat lead shot in your tucker!

Materials: Photo from a Slide Show online at <https://vimeo.com/56446946>
URL:

<http://volcanoartprize.com/portfolio-item/aurukun-shooter-with-spoonbills-barramundi-mixed-tucker-bag/>



Artist's Name: Celeste Chen

Title of Image: Red Frog on a Lily Pad
Lead-Safety Message: Keep frogs happy - keep lead out of the pond

Materials: Colouring pencils on paper
URL:

<http://volcanoartprize.com/portfolio-item/red-frog-on-a-lily-pad/>



Artist's Name: William Nguyen

Title of Image: Orange and blue frog on a lily pad

Lead-Safety Message: Frogs take up toxins through their skin - keep your pond lead-free

Materials: Colouring pencils on paper
URL:

<http://volcanoartprize.com/portfolio-item/orange-and-blue-frog-on-a-lily-pad/>



Artist's Name: William Nguyen

Title of Image: Green and orange water dragon

Lead-Safety Message: Keep the sea lead-free – you never know what is living there.

Materials: Colouring pencils on paper
URL:

<http://volcanoartprize.com/portfolio-item/green-and-orange-water-dragon/>



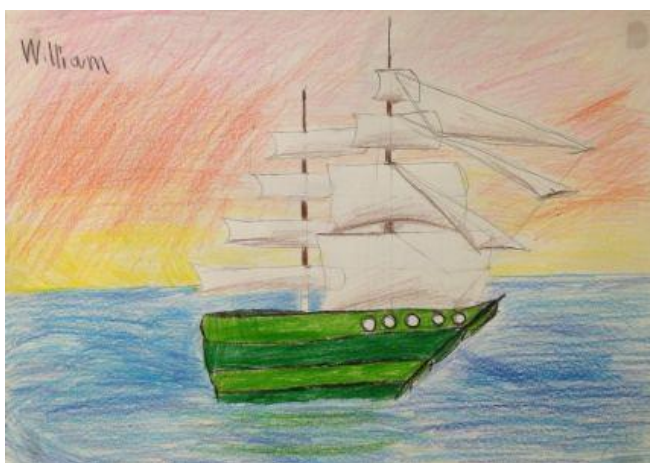
Artist's Name: William Nguyen

Title of Image: Vivid green Sydney Opera House & sunset on Harbour Bridge

Lead-Safety Message: The Sydney Harbour Bridge is having its lead paint removed safely.

Materials: Colouring pencils on paper
URL:

<http://volcanoartprize.com/portfolio-item/vivid-green-Sydney-Opera-House-&-sunset-on-Harbour-Bridge/>



Artist's Name: William Nguyen

Title of Image: Sailing boat

Lead-Safety Message: Most boats were painted with lead paint in the old days.

Materials: Colouring pencils on paper
URL:

<http://volcanoartprize.com/portfolio-item/sailing-boat/>



Artist's Name: Mark Ju
Title of Image: Teddybear
Lead-Safety Message: Take your teddybear when you go to get your blood taken for a blood lead test.
Materials: Colouring pencils on paper
URL:
<http://volcanoartprize.com/portfolio-item/teddybear/>



Artist's Name: Mark Ju
Title of Image: White rose Lead-Safety
Message: Luckily the lead pencil in my background has no lead in it.
Materials: Colouring pencils and lead pencil on paper
URL:
<http://volcanoartprize.com/portfolio-item/white-rose/>



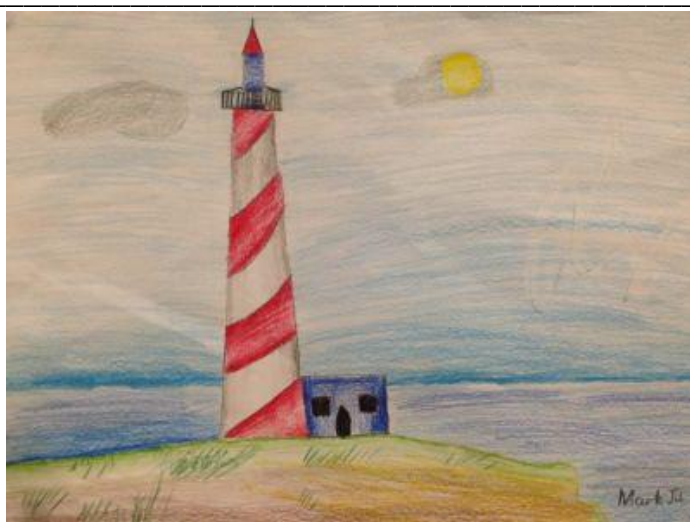
Artist's Name: Mark Ju
Title of Image: Lilies Lead-Safety
Message: Lead pencils used to have lead in them, but now they have graphite.
Materials: Colouring pencils and lead pencil on paper
URL:
<http://volcanoartprize.com/portfolio-item/lilies/>



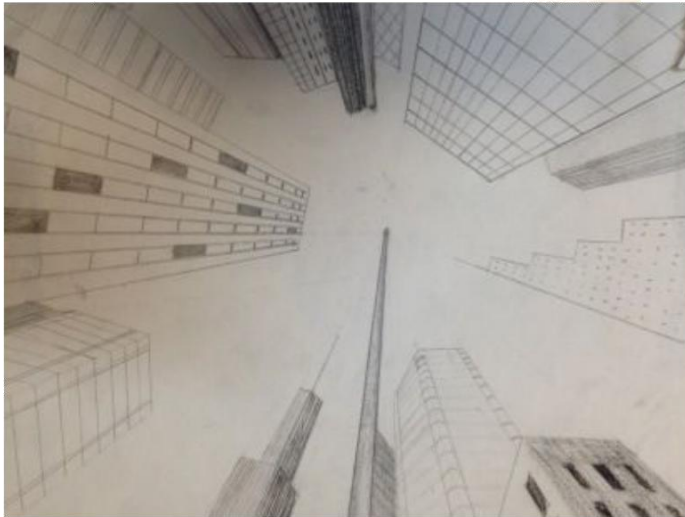
Artist's Name: Mark Ju
Title of Image: Siamese fighting fish (Betta fish)
Lead-Safety Message: In Vietnamese rice paddies where Betta fish live, they need to keep lead bullets out of their water.
Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/Siamese-fighting-fish-or-Betta-fish/>



Artist's Name: Mark Ju
Title of Image: Green frog with lotus flower
Lead-Safety Message: When it rains, don't let lead paint or dust be washed into the stormwater.
Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/green-frog-with-lotus-flower/>



Artist's Name: Mark Ju
Title of Image: Lighthouse
Lead-Safety Message: New lighthouses in Australia are coated in non-lead paint but watch out for old ones.
Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/lighthouse/>



Artist's Name: Mark Ju
Title of Image: City buildings touch the sky
Lead-Safety Message: Old city buildings in Australia can have lead and asbestos in them but new ones don't. Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/city-buildings-touch-the-sky/>



Artist's Name: Mark Ju
Title of Image: Toucan
Lead-Safety Message: If two continents can phase out lead paint, everyone can. Australia 2010, Africa 2020 – which continent is next?
Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/toucan/>



Artist's Name: Mark Ju
Title of Image: Hot air balloons
Lead-Safety Message: Make sure your child is not weighed down by lead – let them reach their potential.
Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/hot-air-balloons/>



Artist's Name: Li-Ke Shi
Title of Image: Blue spotted frog and red crab
Lead-Safety Message: Frogs and crabs need lead-free water
Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/blue-spotted-frog-and-red-crab/>



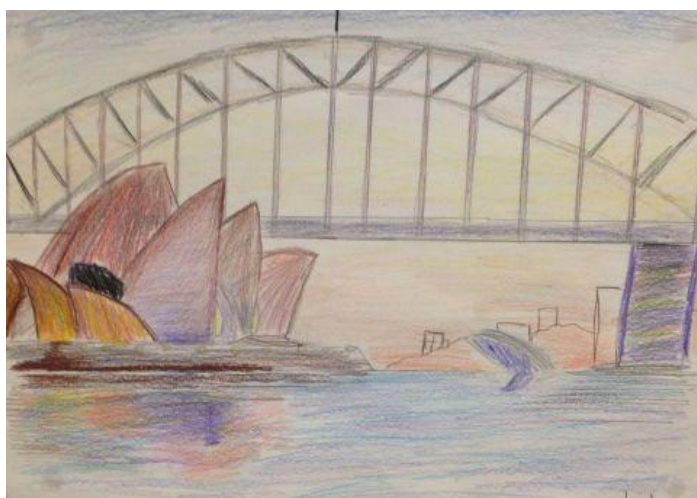
Artist's Name: Li-Ke Shi
Title of Image: Husky Lead-Safety
Message: Never feed your dog meat that's been shot with lead bullets
Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/husky/>



Artist's Name: Li-Ke Shi
Title of Image: Duck, duckling, fish & bulrushes
Lead-Safety Message: Ducks need to eat stones so they can digest their food. Don't let lead shot or bullets get into their water.
Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/duck-duckling-fish-&-bulrushes/>

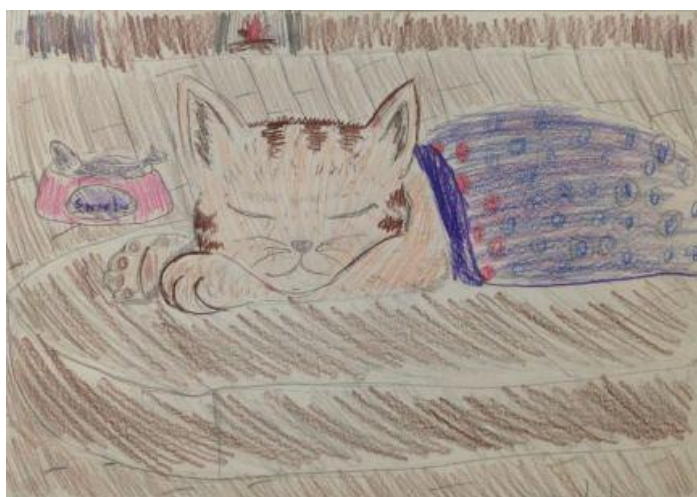


Artist's Name: Li-Ke Shi
Title of Image: Koala Lead-Safety
Message: Koala's can be lead poisoned if they live in gum trees near busy highways.
Materials: Colouring pencils on paper
URL:
<http://volcanoartprize.com/portfolio-item/koala/>



Artist's Name: Li-Ke Shi
Title of Image: Sydney Harbour Bridge & Opera House reflected in Sydney Harbour
Lead-Safety Message: Protect harbour sediments from lead when repainting bridges. Lead from the paint poisons the bottom-feeders.
Materials: Colouring pencils on paper
URL:
<http://volcanoartprize.com/portfolio-item/Sydney-Harbour-Bridge-amp-Opera-House-reflected-in-Sydney-Harbour/>

[Opera-House-reflected-in-Sydney-Harbour/](http://volcanoartprize.com/portfolio-item/Sydney-Harbour-Bridge-amp-Opera-House-reflected-in-Sydney-Harbour/)



Artist's Name: Li-Ke Shi
Title of Image: Sleeping cat by the fire with fish in the food bowl
Lead-Safety Message: I keep my cat happy with healthy food and a clean warm bed.
Materials: Colouring pencils on paper
URL:
<http://volcanoartprize.com/portfolio-item/Sleeping-cat-by-the-fire-with-fish-in-the-food-bowl/>



Artist's Name: Alex Weng
Title of Image: Cat sleeping on the grass
Lead-Safety Message: Cats lick their fur so make sure they don't lie on lead-contaminated soil. Use a LEAD Group Kit to test any bare soil.
Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/cat-sleeping-on-the-grass/>



Artist's Name: Alex Weng
Title of Image: Dolphins soaring
Lead-Safety Message: Dolphins eat fish, sea birds and sea mammals so keeping lead and mercury out of the sea means healthier dolphins.
Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/dolphins-soaring/>



Artist's Name: Alex Weng
Title of Image: Sydney Opera House on Sydney Harbour
Lead-Safety Message: I hope any lead in these shiny white and matt cream glazed ceramic tiles never gets into the harbour.
Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/sydney-opera-house-on-sydney-harbour/>



Artist's Name: Alex Weng
Title of Image: Striped orange sea dragon
Lead-Safety Message: Even sea life that is rarely or never seen needs a lead-safe home.
Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/striped-orange-sea-dragon/>



Artist's Name: Alex Weng
Title of Image: Duck, duckling and bulrushes
Lead-Safety Message: If hunters use non-lead shot, these ducks won't die from lead poisoning if they swallow the shot when diving down to the mud.
Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/duck-duckling-and-bulrushes/>



Artist's Name: Caitlin Ngo
Title of Image: Butterflies with a pink flower
Lead-Safety Message: If lead dust falls on flowers butterflies will be poisoned when they drink the nectar.
Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/butterflies-with-a-pink-flower/>



Artist's Name: Creative Einstein Education (art school) students, Campsie NSW Australia

Title of Image: Remain curious

Lead-Safety Message: If we remain curious we can find out how to make our world lead-safe.

Materials: Colouring pencils on paper
URL:

<http://volcanoartprize.com/portfolio-item/remain-curious/>

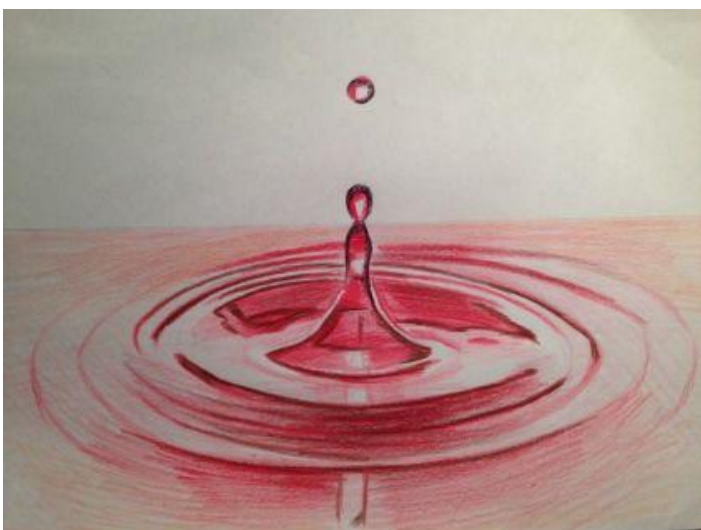


Artist's Name: William Nguyen

Title of Image: Dog with doghouse

Lead-Safety Message: You can test paint and soil for lead with a LEAD Group Kit, and keep your dog lead-safe.
Materials: Colouring pencils on paper
URL:

<http://volcanoartprize.com/portfolio-item/dog-with-doghouse/>



Artist's Name: Mark Ju

Title of Image: A drop of blood

Lead-Safety Message: They only take half a teaspoon of blood when you go for a blood lead test.

Materials: Colouring pencils on paper
URL:

<http://volcanoartprize.com/portfolio-item/a-drop-of-blood/>



Artist's Name: Brandon Banh
Title of Image: Squirrel with oak tree and acorn

Lead-Safety Message: In the California condor's range the use of lead ammunition has been banned to hunt deer, wild pig, elk, pronghorn antelope, coyotes, ground squirrels, and other non-game wildlife, so that the condor's don't die of lead poisoning when they eat the shot animals.

Materials: Colouring pencils on paper
URL:

<http://volcanoartprize.com/portfolio-item/squirrel-with-oak-tree-and-acorn/>



Artist's Name: Brandon Banh
Title of Image: Yellow and blue bird
Lead-Safety Message: When lead ore dust filled the air in the port of Esperance in Western Australia, 9,000 birds died of lead poisoning, before the ore was shipped to China. This should never happen again – birds need to be protected from pollution.

Materials: Quilled non toxic coloured paper
URL:

<http://volcanoartprize.com/portfolio-item/yellow-and-blue-bird/>



Artist's Name: Lola Hou
Title of Image: Dolphins and seaweed
Lead-Safety Message: Our oceans and beaches need to be clean – not polluted by lead-painted scuttled ships or lost lead fishing sinkers.

Materials: Colouring pencils on paper
URL:

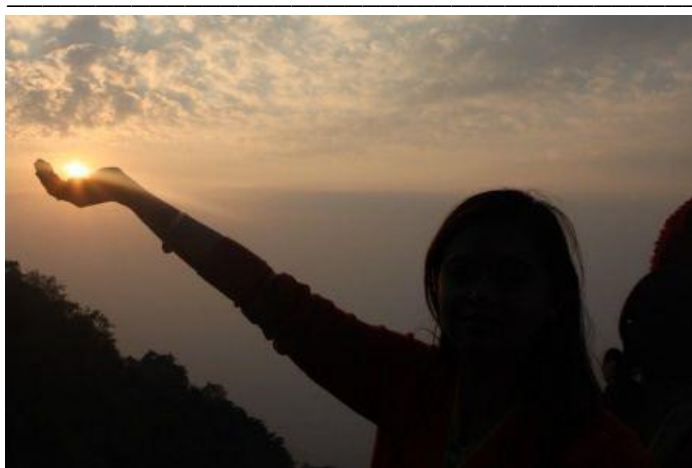
<http://volcanoartprize.com/portfolio-item/dolphins-and-seaweed/>



Artist's Name: Alice Ju
Title of Image: Blue Ringed Octopus or BRO
Lead-Safety Message: Every octopus is venomous, but the Blue Ringed Octopus is lethal. Every heavy metal is toxic, but lead kills the most people, via heart attacks and stroke.
Materials: Non toxic acrylic on canvas board
URL:
<http://volcanoartprize.com/portfolio-item/blue-ringed-octopus-or-BRO/>



Artist's Name: Alice Ju
Title of Image: Tiger – Even big cats get cataracts
Lead-Safety Message: Nearly half of all cataracts in humans are caused by lead exposure. Prevention is the best cure.
Materials: Non toxic acrylic on canvas board
URL:
<http://volcanoartprize.com/portfolio-item/tiger-even-big-cats-get-cataracts/>



Artist's Name: Arindam Bala
Title of Image: Sunset – it's in our hands
Lead-Safety Message: We need a sunset clause to eliminate lead in paint in India.
Description of Work: Canon EOS500D photo
URL:
<http://volcanoartprize.com/portfolio-item/sunset-its-in-our-hands/>



Artist's Name: Arindam Bala
Title of Image: Baby cot Lead-Safety
Message: Lead poisoning is a hidden killer. Is there lead in the varnish on the cot? Test it at a lab to find out. Better still, ask the doctor to test children's blood lead levels.
Description of Work: Canon EOS500D photo
URL: <http://volcanoartprize.com/portfolio-item/baby-cot/>



Artist's Name: Arindam Bala
Title of Image: Birds in a town in Rajasthan India
Lead-Safety Message: Birds are beautiful. Can you please make sure our environment is lead free.
Description of Work: Canon EOS500D photo
URL: <http://volcanoartprize.com/portfolio-item/birds-in-a-town-in-Rajasthan-India/>



Artist's Name: Arindam Bala
Title of Image: Camel cart at sunset in Rajasthan India
Lead-Safety Message: Until there's a sunset clause on leaded aviation fuel globally, this traditional way of getting about is more lead-safe!
Description of Work: Canon EOS500D photo
URL: <http://volcanoartprize.com/portfolio-item/camel-cart-at-sunset-in-Rajasthan-India/>

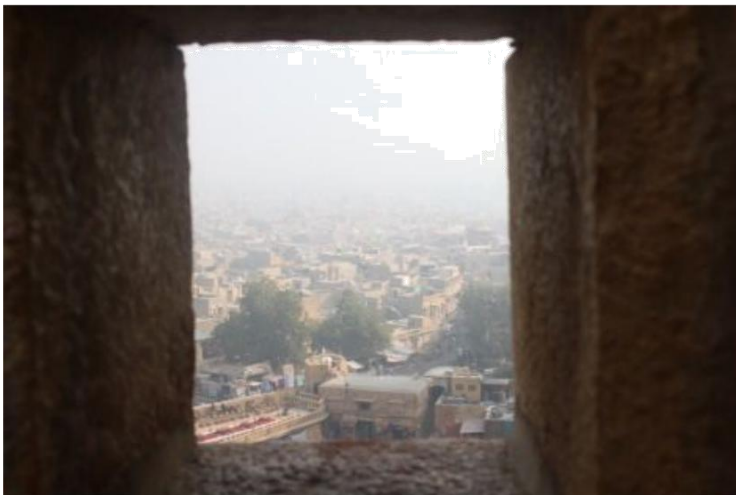


Artist's Name: Arindam Bala Title of Image: Rafting on a river in Rajasthan India

Lead-Safety Message: Don't leave paint flakes, plastic or other rubbish on the ground for stormwater to wash into the river. Keep your river cleaner for a lead-safe world.

Description of Work: Canon EOS500D photo URL:

<http://volcanoartprize.com/portfolio-item/rafting-on-a-river-in-rajasthan-india/>



Artist's Name: Arindam Bala Title of Image: Dust and smoke in Rajasthan India

Lead-Safety Message: Every time you burn something it adds more lead into the air. That's why The LEAD Group is part of the Global Alliance for Clean Cookstoves.

Description of Work: Canon EOS500D photo URL:

<http://volcanoartprize.com/portfolio-item/dust-and-smoke-in-rajasthan-india/>



Artist's Name: Arindam Bala Title of Image: Don't buy me leaded sparklers for Holi

Lead-Safety Message: Every time you burn something it adds more lead into the air. Ask the doctor to test children's blood lead levels before and after Holi. Don't buy leaded sparklers.

Description of Work: Canon EOS500D photo URL:

<http://volcanoartprize.com/portfolio-item/don't-buy-me-leaded-sparklers-for-holi/>



Artist's Name: Ritishaa Sreedhar
Title of Image: MultiColour abstract
Lead-Safety Message: Use non toxic art materials. Never chew on your pencils – there might be lead in the paint on the surface.

Materials: Sketch pen and non toxic acrylic paint

URL:

<http://volcanoartprize.com/portfolio-item/multicolour-abstract/>



Artist's Name: Ritishaa Sreedhar
Title of Image: Australian outback animals at a waterhole
Lead-Safety Message: In Broken Hill lead mining area animals have to watch out for lead bullets as well as lead in the air, soil and water

Materials: Colouring pencils on paper
URL:

<http://volcanoartprize.com/portfolio-item/australian-outback-animals-at-a-waterhole/>



Artist's Name: Ritishaa Sreedhar
Title of Image: Bee on rose, flower bouquet and vase

Lead-Safety Message: If you are eating honey made by bees in the city make sure there is no lead dust on the flowers
Materials: Colouring pencils and textas on paper

URL:

<http://volcanoartprize.com/portfolio-item/bee-on-rose-flower-bouquet-and-vase/>



Artist's Name: Ritishaa Sreedhar
Title of Image: Happy patterned kookaburras
Lead-Safety Message: More beautiful birds will come to our cities if we don't pollute the air with lead dust while renovating or demolishing.
Materials: Colouring textas on paper
URL:
<http://volcanoartprize.com/portfolio-item/happy-patterned-kookaburras/>



Artist's Name: Ritishaa Sreedhar
Title of Image: Feathers on net
Lead-Safety Message: Let your imagination and intelligence not be limited by lead in your brain. Keep our world healthy and beautiful.
Materials: Coloured texta pens on paper
URL:
<http://volcanoartprize.com/portfolio-item/feathers-on-net/>



Artist's Name: Ritishaa Sreedhar
Title of Image: Rainbow colours from the sun
Lead-Safety Message: Keep nature full of colours by keeping lead out of the water and soil.
Materials: Colouring pencils, non toxic crayons and lead pencil on paper
URL:

<http://volcanoartprize.com/portfolio-item/rainbow-colours-from-the-sun/>



Artist's Name: Ritishaa Sreedhar
Title of Image: Whale washed up to shore

Lead-Safety Message: Due to **rising toxic metal concentration in the oceans**, whales are more stressed and more likely to beach themselves. Protect our seas from mercury, cadmium and lead.

Materials: Non toxic crayon and coloured pencils on paper URL:

<http://volcanoartprize.com/portfolio-item/whale-washed-up-to-shore/>



Artist's Name: Ritishaa Sreedhar
Title of Image: Wild Elephant Lead-Safety Message: Elephant in wild free of lead pollution. Don't let hunters come to shoot elephants and lead poison the food cycle.

Materials: Non toxic texta and coloured pencils on paper

URL:

<http://volcanoartprize.com/portfolio-item/wild-elephant/>

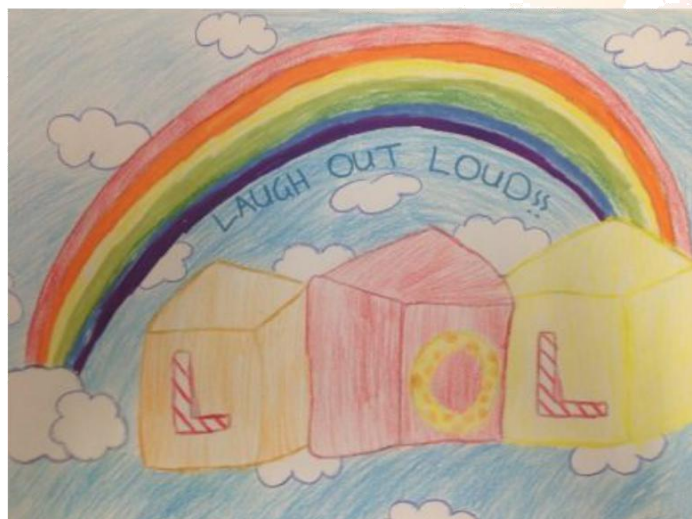


Artist/Photographer: Gabriella Kovac
Title: Hands of God Lead-safety message: Keep our oceans safe from lead.

Description of work: Smart phone photo

URL:

<http://volcanoartprize.com/portfolio-item/hands-of-god/>



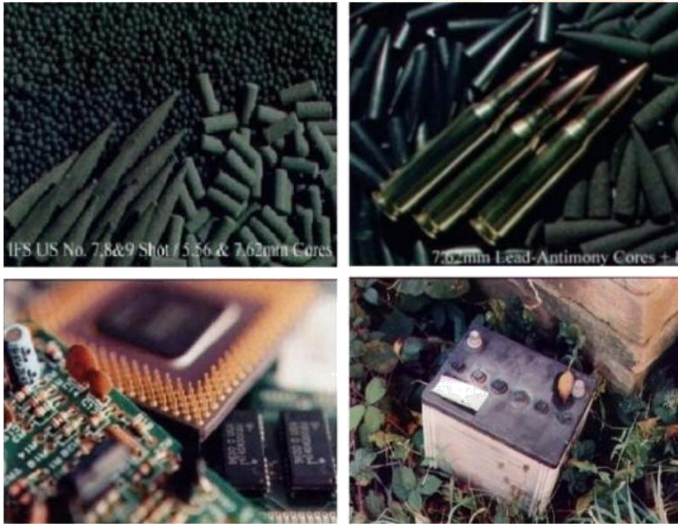
Artist's Name: Cecile Chen
Title of Image: LOL Laugh Out Loud and Leave Out Lead
Lead-Safety Message: When every art material manufacturer leaves lead out of children's paints, crayons, chinks and paint on pencils, every parent in the world can relax.
Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/LOL-laugh-out-loud-and-leave-out-lead/>



Artist's Name: Janice Leelapat
Title of Image: At the beach
Lead-Safety Message: Never let your leaded fishing sinkers get lost at the beach. Birds and animals might get lead poisoned by eating them.
Materials: Colouring pencils on paper
URL: <http://volcanoartprize.com/portfolio-item/at-the-beach/>



Artist's Name: Janice Leelapat
Title of Image: City Streets
Lead-Safety Message: When it rains old lead paint on buildings might get carried away to the stormwater and poison waterlife. Fix old paint lead safely.
Materials: Non toxic watercolour paint on paper
URL: <http://volcanoartprize.com/portfolio-item/city-streets/>



Artist/Photographer: Peter Hurley, Managing Director at Cylenchar Limited and Blake International Limited Title: Leaded ammo, ewaste and used lead acid battery

Lead-safety message: Recycle toxic lead waste safely! Never let it contaminate soil or be licked or ingested by animals – especially if it also contains toxic antimony like the bullets shown here (top right).

Description of work: Photos collaged in

MS Word and Paint, filesize enlarged with AISee

URL: <http://volcanoartprize.com/wp-content/uploads/2016/06/Hurley-Peter-leaded-ammo-ewaste-and-used-lead-acid-battery.jpg>



Artist's Name: Eric Evans

Title of Image: Little girl painting Lead-Safety Message: Every child in the world deserves non-toxic lead free artists materials.

Materials: Non toxic acrylic on canvas board

URL:

<http://volcanoartprize.com/portfolio-item/little-girl-painting/>



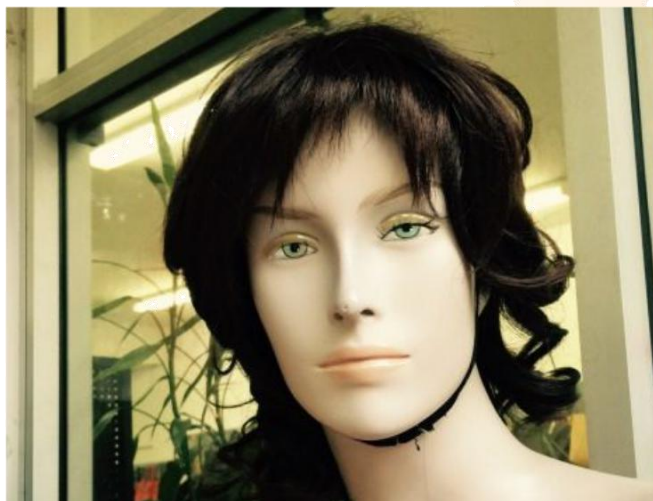
Artist's Name: Eric Evans

Title of Image: I love trees Lead-Safety Message: Protect trees from lead contamination. Trees are the lungs of the planet.

Materials: Non toxic acrylic on canvas board

URL:

<http://volcanoartprize.com/portfolio-item/i-love-trees/>



Artist's Name: Claire Mary Leight

Title of Image: Dumb Brunette Lead-Safety Message: Don't be a dummy, learn about lead safety.

Description of Work: Digital photo, file size enlarged with Aelsee URL:

<http://volcanoartprize.com/portfolio-item/dumb-brunette/>



Artist's Name: Noela Whitton Title of Image: Caucasian design handmade woollen rug wallhanging Lead-Safety Message: When babies are crawling or you have indoor pets, the best place for a rug is hanging on the wall. That keeps your floors moppable and lead-safe.

Materials: Hessian backed woollen rug made by Noela Whitton from a

traditional design from the Caucasus; prepared with Velcro and a wooden strip for wall hanging by Matt Dickie (phone 0412 432 937), rug expert, Persian & Oriental Rugs and Kelims, Sydney, NSW.

URL: <http://volcanoartprize.com/portfolio-item/caucasian-design-handmade-woollen-rug-wallhanging/>



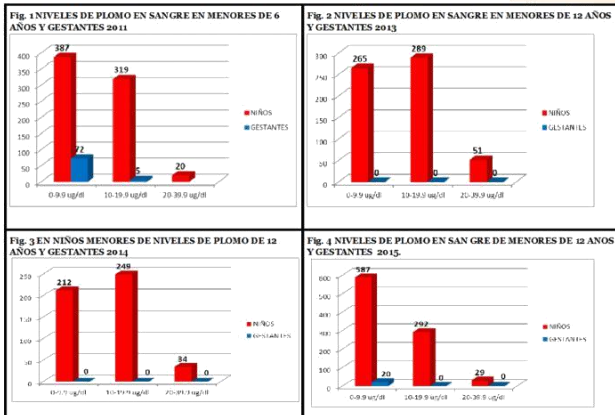
Artist's Name: Roger Kilburn

Title of Image: Cattle need to be kept away from lead

Lead-Safety Message: Cattle will lick sweet lead paint or lead powder on old batteries and they ingest soil when they graze. Use a LEAD Group Kit to test for lead and then remove it or keep a fence between lead and cattle.

Materials: Smart phone photo. URL:

<http://volcanoartprize.com/portfolio-item/cattle-need-to-be-kept-away-from-lead/>

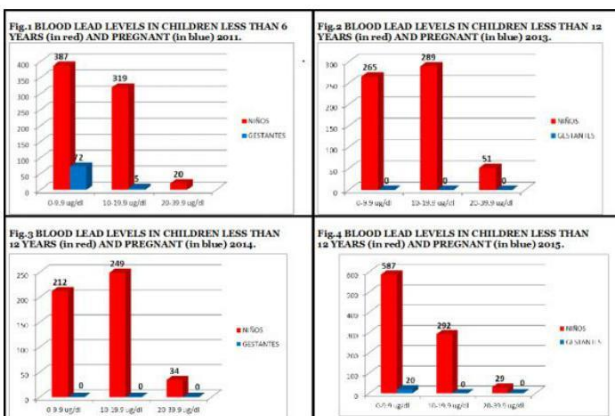


Artist's Name: Dr Godofredo Arauzo Chuco, El Carmen Hospital, Ministerios de Salud [Health Ministry] AND Red Latina sin fronteras [Latin Network without Frontiers]
 Title of Image: La Oroya sigue o la ciudad mas contaminada del mundo Lead-Safety Message: Ya no hay humos en la Oroya desde el 2009 pero los niños siguen naciendo contaminados con plomo
 Description of work: Blood lead graphs
 URL: <http://volcanoartprize.com/portfolio-item/la-oroya-sigue-o-la-ciudad-mas-contaminada-del-mundo/>



Artist's Name: Dr Godofredo Arauzo Chuco, El Carmen Hospital, Ministerios de Salud [Health Ministry] AND Red Latina sin fronteras [Latin Network without Frontiers]
 Title of Image: EL PLOMO DE DOE RUN La Oroya Lead Smelter
 Lead-Safety Message: PHOTO of the Doe Run metallurgical system (lead smelter) in La Oroya, Peru. FOTO del complejo metalúrgico Doe Run (Horno de Fundición de Plomo) en La Oroya, Perú. No mas humo Carajo! No more smoke Dammit!
 Description of work: Photo with text added.

URL: <http://volcanoartprize.com/portfolio-item/el-plomo-de-doe-run/>



Artist's Name: Dr Godofredo Arauzo Chuco, El Carmen Hospital, Ministerios de Salud [Health Ministry] AND Red Latina sin fronteras [Latin Network without Frontiers]
 Title of Image: La Oroya is still the most polluted city in the world
 Lead-Safety Message: There is no smoke in La Oroya since 2009, but children continue to be born contaminated with lead.
 Description of work: Blood lead graphs.
 URL: <http://volcanoartprize.com/portfolio-item/la-oroya-is-still-the-most-polluted-city-in-the-world/>

[city-in-the-world/](http://volcanoartprize.com/portfolio-item/la-oroya-is-still-the-most-polluted-city-in-the-world/)



Artist's Name: Elizabeth O'Brien
Title of Image: Anti-fracking banner in Kempsey NSW Lead-Safety
Message: Fracking can add all sorts of contaminants to the soil and groundwater, including lead. Once you frack you can't go back!
Materials: iPhone 4S photo URL:

<http://volcanoartprize.com/portfolio-item/anti-fracking-banner-in-kempsey-nsw/>



Artist's Name: Elizabeth O'Brien
Title of Image: Made in Vietnam fishing sinkers by SportFisher on display at Kmart
Lead-Safety Message: Why can't I find a warning about lead on the packaging of these sinkers or online and why are they placed where children could open a pack and eat one?
Materials: iPhone 4S photo URL:

<http://volcanoartprize.com/portfolio-item/made-in-vietnam-fishing-sinkers-by-sportfisher-on-display-at-kmart/>



Artist's Name: Elizabeth O'Brien
Title of Image: A perfect lead detox organic breakfast
Lead-Safety Message: Organic food and especially marmalade (which contains pectin), yoghurt, wholegrain foods and green tea are all known for their ability to detox lead from the body.
Description of work: iPhone 4S photo of home-grown organic kaffir lime marmalade home-made by Lyn Bearlin, wholemeal toast, organic butter, organic banana, natural yoghurt, golden kiwi fruit and organic green tea.

URL: <http://volcanoartprize.com/portfolio-item/a-perfect-lead-detox-organic-breakfast/>



Artist's Name: Elizabeth O'Brien
Title of Image: Test your stock feed at a lab with a LEAD Group Kit
Lead-Safety Message: Does your stock feed meet the Stock Food Act lead, cadmium and mercury limits? A [LEAD Group Kit](#) found a brand of chicken feed (not shown here) had 5 times the lead limit but there was no lead detected in the Organic chook food / layer mash made by Country Heritage Feeds.
Description of work: iPhone 4S photos of Stock feed for your horse, parrot, wild bird,

poultry, alpaca, llama, goat, sheep, pig, cattle, dog and cat – collaged together by Mark Goodenough, with google layout engine.

URL: <http://volcanoartprize.com/portfolio-item/test-your-stock-feed-at-a-lab-with-a-lead-group-Kit/>



Artist's Name: Elizabeth O'Brien
Title of Image: Make your yard lead-safe with well-maintained turf
Lead-Safety Message: Any soil near buildings with old paint should be tested with a LEAD Group Kit. Depending on the lab lead result, we may recommend fresh turf be laid.

Description of work: iPhone 4S photos of turf ready to be laid in the back yard of a home in inner Sydney. URL:

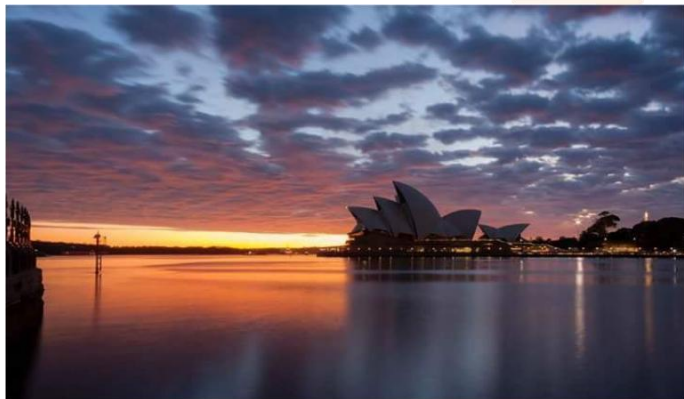
<http://volcanoartprize.com/portfolio-item/make-your-yard-lead-safe-with-well-maintained-turf/>



Artist's Name: Ian Smith
Title of Image: Internal wall mural
Lead-Safety Message: As long as you get a competent contractor like Lets Clean in Sydney, to safely strip your lead paint, and then use non-lead paint, you can camouflage surface defects with a mural and AND be lead-safe!

Materials: Various colours of leftover residential paint bought after 1997 (no added lead by law) on bare 1884 originally exterior wall filled-in and converted to an interior wall in the 1960s.
URL:

<http://volcanoartprize.com/portfolio-item/internal-wall-mural/>



Artist's Name: Peter Larkin
Title of Image: Sunrise on Sydney Harbour. Lead-safety Message: Every speck of lead dust or paint that is washed into Sydney Harbour when it rains, affects the marine life and builds up in the sediment. Report dusty demolition work or flaking/sanding of old paint to the Environment Protection Authority. Description of work: Photo taken with a Canon EOS 40D SLR

camera. URL: <http://volcanoartprize.com/portfolio-item/sunrise-on-sydney-harbour/>



Artist's Name: SAL (Sydney Analytical Laboratories). Title of Image: SAL is a Lead Safe World Partner
Lead-Safety Message: Sydney Analytical Laboratories (SAL) supports lead-safety in Australia by testing lead and other heavy metals in eggs, paint, water, dust, soil, toys, jewellery, etc and asbestos in building materials via LEAD Group Kits. Materials: Photos collaged using Word and Paint. URL: <http://volcanoartprize.com/portfolio-item/sal-is-a-lead-safe-world-partner/>



Artist's Name: UNSW Business School
Title of Image: Combine your passions. Creative Einstein.
Lead-Safety Message: Be like Alice Ju of Creative Einstein. Combine your passions with your work. Great things happen when you ask why not. Why not help The LEAD Group create a lead-safe world? Materials: Film
Original URL of film: <https://www.business.unsw.edu.au/our-people/Alice-Ju>

URL: <http://volcanoartprize.com/portfolio-item/combine-your-passions-creative-einstein/>



Artists' Names: Elizabeth O'Brien (film) and Ian Smith (soundtrack)

Title of Image: Amazing snake climbing a post movie. Lead-Safety Message: This powerful, strategic and determined children's python, in going up the post to the roof, inspires me to ensure that The LEAD Group persists until the world is lead-safe. World. Materials: Video filmed on iPhone 4S. Electric keyboard improvisation by Ian Smith recorded and edited using Ableton. Music added to the timeline by Dennis Leight using Premiere Pro. Original URL of film:

www.youtube.com/watch?v=MlqEwLR8m1U

URL: <http://volcanoartprize.com/portfolio-item/amazing-snake-climbing-a-post-movie/>



Artist's Name: LeadPro

Title of Film: LeadPro's "Green Machine" for Retrieving Lead Shot: See the Green Machine in Action

Lead-Safety Message: Using a revolutionary process, the Green Machine extracts approximately 95 percent of lead shot from the ground.

Description of work: Film

URL:

<http://volcanoartprize.com/portfolio-item/leadpros-green-machine-for-retrieving-lead-shot/>



Artist's Name: Monica Erosa

Title of Image: Perspectives Lead-Safety Message: My piece represents the way we can all remain focused in our own personal worlds, limiting our awareness of the way we are contaminating the air, water, and soil as well as poisoning ourselves.

Materials: Oil on canvas.

URL: <http://volcanoartprize.com/portfolio-item/perspectives/>



Artist's/Photographer's Name: Andrea Didik Photography

Title of Image: I am one month old

Aarav I am Papa's baby Lead-Safety

Message: My parents organised blood lead testing before they tried to make me, and during the first trimester and at the birth the cord blood was tested. I'm going to have a wonderful lead-safe life.

Materials: Photographs collaged together with Word and Paint URL:

<http://volcanoartprize.com/portfolio-item/i-am-one-month-old-aarav-i-am-papas-baby/>

Free Subscription to e-Newsletter Notifications / Membership & Donation Forms

You can receive a free emailed notification whenever a LEAD Action News has been web-published just by filling in the Subscription Form at

http://www.lead.org.au/LEAD_Action_News_Subscription.html - you can choose whether you want just those in English, Spanish or Chinese or those in ANY of those languages.

Become a member of The LEAD group Inc. at <http://www.leadsafeworld.com/shop/> (which also entails emailed notification when a newsletter is web-published and entitles you to discounts when you purchase any of our LEAD Group DIY-sampling laboratory lead analysis Kits) / or make a donation to the Lead Education and Abatement Fund (LEAF) at

<http://www.leadsafeworld.com/donations> or at <http://www.lead.org.au/sb.html> or http://www.lead.org.au/Donation_LEAF.pdf