



## Summary of Mass Lead Poisoning Incidents

Lead has been used for thousands of years in products including paints, gasoline, cosmetics, and even children's toys, but lead battery production is by far the largest consumer of lead. Although chronic exposures to lead affect both children and adults, there have also been many reports of localized mass acute lead poisonings. Below we outline some of the largest lead poisoning incidents related to the manufacturing and recycling of lead batteries that have been reported since 1987.

### **Jiangsu Province, China 2012**

A preliminary investigation of lead poisoning caused by wire rope manufacturers in Nantong City revealed that 184 children, or 28% of those tested, had elevated blood lead levels above 10 ug/dl and 19 were being treated for lead poisoning. All children under the age of 10 were being offered testing. Some of the manufacturing plants are within 50 meters of residences.

### **Gansu Province, China 2012**

An investigation into reported lead poisoning of workers at the Tongjia Renewable Resources Processing plant, which smelts and processes pig iron, revealed blood lead levels between 40 and 80 ug/dL in 57 of the plant's workers as of May 2012. The investigation is ongoing.

### **Hechi City, Guangxi Province, China 2012**

At least 103 children living near a cluster of nine heavy metal smelters were found to have blood lead levels between 10 and 25.6 ug/dL. The incident occurred weeks after a cadmium spill in a river caused local authorities to order all smelters in the area to move to two industrial parks in another area over the next five years. Companies refusing to move will be shut down.

### **Guangdong Province, China 2012**

In February 2012, several residents of Dongtang Township were found to have excessive levels of lead in their blood. Follow-up studies in March and April of over 446 children and 85 adults revealed elevated blood lead levels in more than 160 children. Six nearby manufacturing plants using lead were closed as a result of the poisonings. These included Aoke, Jinlida, and Hongda. Two other plants, Jinbaicheng and Huayuan, were ordered to suspend production, and the Danxia smelter and Fankou lead and zinc mining plant were ordered to improve their pollution controls.

### **Lingbao, Henan Province, China 2011**

A lead smelter was shut down after a July 2011 television report of soils containing excess lead levels and an 87% prevalence of lead poisoning in children in Yuling Township. Two other factories in the downtown area of Lingbao have halted production

and 3,000 residents from Jiankou Village will be moved five kilometers away by the end of May 2012. Lingbao has lead reserves of 600,000 tons and was once known as the “lead capital”.

### **Shanghai, China 2011**

Twenty-five children living in Kanghua New Village were found to have elevated blood lead levels. At least ten of these children were hospitalized for treatment. As a result, the Shanghai Environmental Protection Bureau shut down two factories for additional investigations that are reportedly located approximately 700 meters away from the village. After further investigation, 49 children in the Kangqiao area of Pudong district were found to have elevated blood lead levels. Shanghai Johnson Controls International Battery Company Ltd. was found to be a major source of the lead contamination. Shanghai Xinmingyuan Automobile Parts Co., Ltd., which used lead in the manufacture of wheel weights, and a nearby recycler were also cited as sources of the lead contamination. The government announced in February 2012 that the Johnson Controls plant at that location would be shut down.

### **Jiangsu Province, China 2011**

One-third of the employees at Taiwanese-owned Changzhou Ri Cun Battery Technology Company in eastern Jiangsu province were found with elevated BLLs between 28-48ug/dL. All employees of the lead battery plant were tested after a pregnant employee discovered through testing her BLL was twice the level of concern. Production at the factory was temporarily suspended.

### **Yangxunqiao, Zhejiang Province, China 2011**

More than 600 people (including 103 children) working in and living around a cluster of aluminum foil fabricating workshops were found with excessive blood lead levels (BLLs). Demonstrations by the workers prompted the government to provide modest compensation to poisoned workers and children.

### **Deqing County, Zhejiang Province, China 2011**

The Zhejiang Haijiu Battery Company was confirmed as the source of lead emissions responsible for poisoning of 53 people who required hospitalization to undergo treatment. An additional 275 people in the area were found with BLLs in excess of recommended levels. Following this incident, the government suspended operations of this plant and 273 additional battery manufacturers in the province to conduct further investigations.

### **Zijin County, Guangdong Province, China 2011**

44 children living near Sunnyway Battery Company in Guangdong Province's Zijin County were found with excessive lead in their blood. Some of those tested had BLLs that reached 60 ug/dL. Initial testing indicated that only 3 of the 199 tested had elevated BLLs. Reports indicate that some local residents were suspicious of the initial test results and traveled to Guangzhou for confirmatory testing, which revealed that far more people had high BLLs than was originally indicated.

### **Taizhou City, Zhejiang Province, China 2011**

The Suqi Storage Battery company in Taizhou City closed after it was confirmed to have poisoned at least 168 residents from the community surrounding the plant. One of those poisoned had a BLL that reached 79 ug/dL. At least 53 of those with elevated BLLs were children. Three officials of the local environmental protection bureau were suspended. Ying Jianguo, General Manager of the plant was sentenced to 15 months in prison after the court determined that the plant had violated environmental regulations by secretly increasing emissions. The company was fined 100,000 yuan (\$15,870) and Ying was fined 50,000 yuan.

### **Huaining County, Anhui Province, China 2011**

The Borui Battery Co. Ltd. and another unnamed battery manufacturing plant were shut down after testing confirmed that over 200 children living in the surrounding Xinshan community had elevated BLLs. Twenty four of the children were described as having moderate to severe cases of lead poisoning and required hospitalization. Many of these children are less than one-year old.

### **Bogor, West Java, Indonesia 2010**

Elementary school children in a village in Bogor, Indonesia, were tested and found to have an average BLL of 33 ug/dL— approximately three times the acceptable limit. One of the children tested, a 7-year-old girl, was determined to have a BLL of 60 ug/dL. The source of the lead is believed to be the village's large number of small, informal battery recycling facilities. Since the 1980s, over 40 lead battery recyclers have been in operation in the village. Some of these facilities were closed as all of the children recently tested had BLLs exceeding the acceptable WHO action limit of 10 ug/dL. Soil tests determined that lead concentrations were over 225,000 ppm, far exceeding the US EPA standard of 400 ppm.

### **Binhai County, Jiangsu Province, China 2010**

*First Financial Daily* reported that ten children living near Chaowei Power Co. Ltd. in Fuzhong Village had symptoms of lead poisoning. An official investigation into the cause of these symptoms was not conducted.

### **Ningyang County, Shandong Province, China 2010**

Residents of Wujialin Village in Shandong Province submitted a statement to *First Financial Daily* indicating that contamination from battery manufacturer, Chaowei Power was causing lead poisoning in those living in the area surrounding the plant. It is reported that 121 out of the 145 villagers tested, had BLLs in excess of the 10 ug/dL. Local government officials handling this poisoning reported that only 5 of those tested had BLLs exceeding this limit.

### **Sixian County, Anhui Province, China 2010**

Local residents in the Sixian Economic Development Zone, protested the continued operation of Huifeng Power, a lead-acid battery manufacturer, after medical tests from more than one hundred children living in the area revealed that many had elevated blood lead levels (BLLs). According to residents there are numerous homes and three schools,

attended by at least 8,000 students, located near the plant. A recent report indicates that complaints about the pollution problem were made to local authorities but no action has been taken. The factory continues to operate.

#### **Xinyi, Jiangsu Province, China 2010**

The Naier Storage Battery Ltd Company, a manufacturer of lead batteries, was closed after blood tests confirmed that at least four children in the surrounding area had excessive levels of lead in their blood. The factory, a manufacturer of lead batteries, is located less than 150 meters from a residential area. The local government indicated that physical examinations were being offered to all residents of the area and that the families of the four poisoned children received compensation.

#### **Chongyang, Hubei Province, China 2010**

In an industrial area of Chongyang County, at least 30 people, including 16 children, were found to have excessive BLLs. Two-thirds of those with high BLLs were hospitalized. The incident occurred in the community around the Hubei Jitong Battery Co., which manufactures lead batteries. Reports have indicated that occupational exposures resulting in take-home lead exposures by the workers may be responsible for poisoning these children. The county government has suspended the battery plants operations until further investigation.

#### **Chenzhou, Hunan Province, China 2010**

Three lead smelters, including the Yuanshan Lead Recycling Company, in Chenzhou City are believed to have poisoned nearly 200 children living in nearby communities. Some of those children tested were confirmed to have four to five times the acceptable threshold exposure to lead and were hospitalized. The smelters believed to have caused the poisonings have been closed by the Chenzhou Municipal Environmental Protection Bureau.

#### **Neijiang, Sichuan Province, China 2010**

Zhongyi Alloy Company was ordered closed following the confirmed poisoning of at least 88 children living in close proximity of the smelter. After a local resident was found to have dangerously high BLLs, authorities ordered testing of all residents living within an 800-meter radius of the factory. Seven children had dangerously high BLLs and were hospitalized in the provincial capital of Chengdu.

#### **Dafeng, Yancheng, Jiangsu Province, China 2010**

Blood lead testing of 110 children in the industrial district of Dafeng indicated that approximately half who lived in the area of a lead battery plant have blood lead levels in excess of 10 ug/dL. The Shengxiang Battery Company, the suspected source of the poisonings, is located less than 100 meters from the village. The factory was closed and ordered to relocate.

#### **Kampong Cham Province, Cambodia 2010**

Numerous health complaints were reported by those residing near a battery recycling plant that began operating nearly four months ago in the Memot District of Kampong

Cham Province. Local villagers began raising complaints that the factory emitted intense, foul smelling odor. These complaints reached local civil society organizations and government officials who sent public health authorities to examine the factory emissions. After determining the emissions were indeed a threat to human and environmental health, the factory was closed in April 2010 for further investigation.

#### **Jiyuan City, Henan Province, China 2009**

In Jiyuan City, Henan Province, blood samples confirmed that over 1000 children living near lead smelters had BLLs exceeding 25µg /dL. The three large plants believed to be the source of these exposures are Yuguang Gold and Lead Group, Wanyang Smelter Group, and Jinli Smelting. Families living within 1 km of the plants were ordered to move, with a small relocation stipend provided by the government.

#### **Mombasa, Kenya 2009**

In early 2009, Metal Refinery EPZ Ltd., a lead battery recycling company operating a factory in Mombasa, Kenya, was closed by local public health officials following massive public outcry that the operation was poisoning workers and community members. At least three children living in the nearby Owina Ouru slum were confirmed to have blood lead levels in excess of the 10 ug/dL. The local Public Health Department has approved the factory's reopening, and there are reports that it is operating at night.

#### **Qingyuan, Guangdong Province, China 2009**

Aokelai Power Co. Ltd, a battery factory in the Qingyuan industrial area, is confirmed to have poisoned over 40 children. The factory is situated less than 50 meters from a residential area that houses workers of a nearby aluminum factory and their families. The factory was ordered closed until it complies with environmental standards.

#### **Tangxia, Jiaoyang, and Chongtou, Fujian Province, China 2009**

A battery manufacturing facility is confirmed to have poisoned at least 121 children in three villages of Fujian. The Huaqing Battery Factory in Shanghang County, in operation since 2006, was temporarily closed by government officials following protests by affected residents in the surrounding areas. Reports indicate that most children with elevated test results were in the range of 10 to 20 ug/dL with at least one case exceeding 21 ug/dL.

#### **Kunming, Yunnan Province, China 2009**

In an industrial area outside of Kunming, over 200 children tested positive for lead poisoning. The local environmental bureau has denied the correlation between the poisonings and industrial pollution. No closures have been made to any of the area's industry. According to Kunming's Center for Lead Poisoning Prevention, an average of 50-60% of children under 14 in Yunnan's mining intensive regions suffer from lead poisoning.

#### **Wenping, Hunan Province, China 2009**

In southeastern China's Wenping village, elevated BLLs were found in over 1,300 children living near a newly opened and unlicensed manganese smelter. Seventy percent

of children tested were found to have BLLs in excess of 10 ug/dL. At least 17 of these children were treated in nearby hospitals for severe lead poisoning. Officials have ordered the smelter closed until it meets environmental standards and have detained two of the plants owners for operating without the appropriate licenses. According to reports by Xinhua news agency, a kindergarten and a primary and middle school are located less than 1,700 feet of the smelter.

#### **Changqing, Shaanxi Province, China 2009**

At least 851 children living near the Dongling metal smelter, China's fourth largest lead and zinc smelter, tested positive for lead poisoning. Some of these children are confirmed to have BLLs over ten times China's current level of concern of 10 ug/dL. Violent protests by angry parents and village residents caused authorities to temporarily close the smelter until it meets environmental standards. This closure comes several weeks after the plant initially ignored recommendations from local environmental authorities to suspend operations until specific environmental criteria were met. The local government promised as early as 2006 to relocate people living in the primarily industrial area near the Dongling smelter, but has yet to provide alternate housing.

#### **Pizhou City, Jiangsu Province, China 2008**

Nearly 100 children living in Xinsanhe Village were confirmed to have BLLs exceeding 10 ug/dL. Jiansu Chunxinshengke Alloy Co. Ltd., the battery company responsible for the poisonings, was within 100 meters of the village where many people were living. It was closed by authorities following the poisonings.

#### **Dakar, Senegal 2008**

The World Health Organization reports that at least 18 children died from lead poisoning over a three-month period in 2008 in the Dakar suburb of Thiaroye sur Mer. The residents of this area made their livelihood from melting down used lead batteries to sell the salvaged metal. After the deaths were reported, an investigation revealed that at least 950 people living in this district were significantly exposed and dozens of additional children were found to have potentially lethal levels of lead in their blood. Some of the critically ill children had more than eight times the acceptable threshold of lead. While WHO and the Senegal Ministry of Health are treating children found to be severely poisoned, many still face long-term neurological damage.

#### **Tibet, China 2006**

According to the Unrepresented Nations and Peoples Organization (UNPO), a report from the Xinhuanet news agency, published on March 27, 2006, named four lead smelting enterprises as being responsible for widespread pollution and mass lead poisoning of at least 100 children in the Ganhetan Industrial District – the Western Mining Co Ltd Branch Co, Ka'erduo Smelting Works, Western Regions Lead Smelting Ganhe Smelting Works, and the Western Regions Lead Industries Ganhetan Crude Lead Factory. There is ongoing unrest and health impacts as the pollution issue has not been resolved and new smelters continue to be built throughout Tibet.

### **Lushi County, Henan Province, China 2006**

Nearly 450 people living in the area surrounding the Lushixinghuo Smelter were tested and determined to have elevated BLLs. While the national government ordered the plant to be closed, it continued operation for nearly a year following the poisonings. A court hearing found the local environmental officials guilty of negligence and the plant finally ceased operations.

### **Dong Mai, Vietnam 2006**

Dong Mai village, 40 km from Hanoi, was the site of several smelters that processed over 40 tonnes of scrap lead batteries each day. Airborne lead levels have been reported to be 4,600 times the national standard and lead in water 15 times higher. Over 500 local residents have chronic illnesses due to lead poisoning and 35 people have become disabled, including 25 children with severe neurological disorders. The Vietnamese government has since closed the smelters in this village, but some small lead battery recycling operations continue.

### **Xinsi and Moba Villages, Gansu Province, China, 2006**

In Gansu Province concerned residents traveled hundreds of kilometers to access medical facilities to determine if a local lead smelting plant was poisoning them and their children. Local hospitals refused to test residents for lead poisoning, so they traveled 300 km to Xijing Hospital where 954 children were found to have blood lead levels greater than 10 ug/dL. Ten children were hospitalized, at least four with severe poisoning. In addition, 43 adults in the area were found to have blood lead levels of over 40 ug/dL. Chinese press reported that the Huixian County Non-Ferrous Metal Smelting Co Ltd chose this rural location because it would be more likely to escape scrutiny of the government. Before the facility was shut down it produced 5,000 lead ingots per year and dumped waste into open slag piles.

### **Mafang Village, Henan Province, China, 2005**

In June 2003, the Oriental Golden Lead Co Ltd constructed a new lead smelter near the village of Mafang. The company neglected to do an environmental impact assessment prior to building on the new site. Almost immediately production resulted in excessive emissions of sulphur dioxide and lead dust. In 2005, 259 village children were tested for lead in their blood. Eighty percent of the children were found to have BLLs in excess of the 10 ug/dL acceptable limit including eight children with over 30 ug/dL. Villagers reported to local media that the majority of the village children had left their homes for schools further away because of the danger to their health.

### **Meishan Town, Zhejiang Province, China, 2005**

Meishan is the site of the Tianneng Lead Battery Factory. In May of 2005, 700 out of 1,300 local children tested for lead poisoning at a nearby hospital were found to have lead exposures over 10 ug/dL. In August, town residents staged a protest by locking the employees in the factory. They demanded the government close or relocate the plant because it was poisoning their children. The prior factory inspection in October 2004 showed the facility was in compliance with waste discharge standards according to the

director of the State Environmental Protection Bureau. The protest ended when the local government agreed to take steps on the community's behalf.

### **Guangzhou Nanfang, China 2005**

In 2005 many of the workers at the Guangzhou Nanfang Guangyuan Super Energy Battery Ltd, a major producer of auto batteries in China, began to complain of nausea and stomach pains. After 400 of the company's workers underwent a physical exam, 140 workers were subsequently diagnosed with lead poisoning and treated by nearby hospitals. Immediately following the chelation treatment the workers were forced to return to work in the same factory with no significant changes in working conditions. The company denied all claims of wrongdoing by saying they had warned the workers about lead poisoning when recruiting and had established safety rules to protect them.

### **Mitrovicia, Kosovo, 1999**

In 1999 450 Roma families were relocated to internally displaced persons camps which were contaminated by lead mine tailings in North Mitrovicia Kosovo. Blood lead surveillance studies conducted in 2001 and 2003 indicated that all children less than 6 years old had blood lead levels that exceeded 65 ug/dL, the threshold at which chelation therapy is recommended. In the 10 years since the families were located into the internally displaced person camps, blood lead levels have decreased, but the most recent surveillance indicates that average blood lead levels of children under 6 years old is still 25 ug/dL.

### **Torreón, Mexico 1998**

In 1998, there were reports of lead poisoning among children living in Torreón near the Met-Mex Penoles metal processing plant --the largest in Latin America. In 2001, the U.S. Center for Disease Control (CDC) tested 367 children in the area surrounding the plant. The agency found that 20% of the children had BLLs greater than 10 ug/dL, and 5% of the children had blood lead levels greater than 20 ug/dL. In the areas closest to the lead smelting site, 33% of the children had BLLs greater than 10 ug/dL and 12% had greater than 20 ug/dL. The CDC recommended the site continue to be monitored and that educational interventions on hazardous material hygiene for parents of at-risk children be continued.

### **Haina, Dominican Republic 1997**

A lead battery recycling plant in Haina closed in March 1997. At that time a study was performed to determine the impact of the lead pollution from the plant on local children. A survey of 116 children showed that they had an average BLL of 71 ug/dL. Although the recycling of lead batteries was discontinued, a great deal of lead waste in the form of lead dust remained. A subsequent survey conducted 5 months later was performed on 146 local children. The average BLL decreased to 32 ug/dL. While this was still three times the acceptable WHO action limit, the closure of the battery recycling plant resulted in lowering the local children's lead exposures.



### **Managua, Nicaragua 1996**

One of the largest lead battery factories in Nicaragua, FANABASA, had operated for 15 years in Barrio Pablo Ubeda, in southeast Managua. In 1996, parents of children living near the plant began to complain about pollution from the plant. In response, a study of the lead levels in the local children was conducted. A group of 30 children in Villa Venezuela located further east in the city and similar in makeup was used for comparison. The children of Barrio Pablo Ubeda who were between 6 and 13 years of age had an average BLL of 17 ug/dL and 80% were above 10 ug/dL. The 30 children in Villa Venezuela control area had average BLLs of 7 ug/dL. FANABASA was closed shortly thereafter in response to the community outcry.

### **Tunapuna, Trinidad 1991**

After two siblings fell ill and were admitted to a hospital with seizures and paralysis, an extreme case of lead poisoning was discovered among an extended family of 20 children. The youngest, a boy of two years, died before his doctors made the link to lead exposure; his blood lead level (BLL) was 218 ug/dL (the WHO acceptable level is under 10 ug/dL). His sister, age six, was saved by the use of chelation therapy but suffered severe and permanent neurological damage; her blood lead level was 235 ug/dL. An investigation revealed that the family lived at the site of a former metal salvaging operation that recycled lead batteries. Remains of the batteries had been mixed with the topsoil and used as landfill. This resulted in soil with excessive levels of lead as well as scattered battery casing fragments easily accessible to children. Five houses were built on this site and the other 18 children who had grown up there were tested. All of these children were found to have excessive BLLs.

### **Kingston, Jamaica 1987**

In August of 1987, Jamaican public health officials noticed that the large majority (86%) of lead poisoning cases in the city of Kingston were children who lived near backyard lead battery repair shops. Nine of these children had acute encephalopathy and seizures, and four were repeatedly treated for lead toxicity over a 15-month period. At that time there were 50 small lead battery repair shops in Jamaica. Each shop typically employs one to two workers and shares space with a residence. A subsequent study found potentially hazardous levels of lead in the soil and in household dust in these residences.

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