



INFORMATION RELEVANT TO THE REVIEW OF ANNEXES A AND B

1. Batteries

Under Annex A of the Convention, zinc air and silver oxide button cell batteries are exempt from the current phase-out control measures, when the mercury is used in concentrations of 2% or less (typical for corrosion prevention). During the negotiations, concerns were raised about the global availability of mercury free technologies for these battery types.

Since 2013, global availability of mercury free zinc air and silver oxide button cells has substantially increased. Many manufacturers now provide these battery types mercury free. In the case of zinc air button cells, used primarily for hearing aids, the following global companies offer mercury free products: Sony, Power One, Varta (Montana Tech), Renata, Duracell, Energizer, Rayovac (Spectrum), iCell Technologies, Toshiba, Kodak, Nexcell, and Camelion. Battery manufacturer associations in Japan, Europe, North America, and Latin America report all their member companies successfully phased out mercury use.¹

In China, zinc air button cells are manufactured by Zeni Power (Zhuhai ZhiLi), one of the largest global hearing aid battery manufacturers.² Other Chinese companies producing or marketing mercury free hearing aid batteries include Shenzhen Euni Battery Company³, Shenzhen Everwin⁴, Guangzhou Great Power Energy & Technology⁵, Naccon Power Technology,⁶ NAFU⁷, Guangdong TIANQIU Electronics

¹ See

http://www.mercuryconvention.org/Portals/11/documents/meetings/COP4/submissions/Battery_Associations.pdf.

² See <https://www.zenipower.com/product.html>. All battery websites identified in footnotes 2-14, and 16-25 were accessed on May 5th, 2020.

³ See

https://s.1688.com/selloffer/offer_search.htm?keywords=%D0%BF%BF%D5%C6%F8+%D3%EE%C1%A6&n=y&netType=1%2C11&encode=utf-8&spm=a260k.dacugeneral.search.0

⁴ See

https://s.1688.com/selloffer/offer_search.htm?keywords=%D3%C0%BE%A2%D4%B4++%D0%BF%BF%D5%C6%F8&n=y&netType=1%2C11%2C16

⁵ See http://www.greatpower.net/cplb/info_159.aspx?itemid=297&cid=25

⁶ See <https://naccon.en.made-in-china.com/product-group/ZMhxBqTZpWK/Zinc-air-Hearing-aid-battery-catalog-1.html>

⁷ See <https://search.jd.com/Search?keyword=南孚%20 锌空气&enc=utf-8&wq=南孚%20 锌空气&pvid=4dd73dcf95c04b04992a86db557f47b2>.

Technology⁸, Shenzhen Doublepow Electronic Technology,⁹ Shenzhen Estar Battery Company¹⁰, and Fuzhou TDRForce Technology Co.¹¹. In addition, imported mercury free batteries are available on the Chinese market from providers not otherwise listed above, such as Resound¹², Soundmend¹³, and SMENGD¹⁴.

In the case of silver oxide batteries, often used in watches, major global manufacturers/marketers include Renata, Maxell, Sony, Seiko, Varta, Camelion, Energizer, Duracell, and Panasonic. Again, battery manufacturer associations in Japan, Europe, North America, and Latin America report all their member companies successfully phased out this mercury use.¹⁵

Chinese manufacturers include Shenzhen Vtery (Weineng)¹⁶, Dongguan Enchi Electronics¹⁷, Shenzhen THUMBCELLS¹⁸, Dongguan Ditu¹⁹, Shenzhen Anderui²⁰, Shenzhen XSYCELL²¹, Huizhou JinYu²², Shenzhen Dualwin Technology Company²³, Ningbo Baisheng Electronic Technology²⁴, and Dongguan Liantong Photoelectricity Technology Company.²⁵

⁸ See <https://search.jd.com/Search?keyword=天球锌空气&enc=utf-8&wq=&pvid=aed91b43b472424c9449f0529eb4a2ba>.

⁹ See https://doublepowenergy.en.alibaba.com/productgrouplist-814836579/1_45v_Zinc_Air_Battery.html?spm=a2700.icbuShop.88.68.4cd5791eQS3vbN

¹⁰ See <https://eastarbattery.en.alibaba.com/search/product?scene=all&SearchText=zinc%20air%20battery&spm=a2700.icbuShop.41413.dsrhbtn&groupId=806211007>

¹¹ See <http://www.tdrforce.com/cate-13739-16542.html>

¹² See https://s.1688.com/selloffer/offer_search.htm?keywords=%C8%F0%C9%F9%B4%EF+%D0%BF%BF%D5%C6%F8&n=y&netType=1%2C11

¹³ See https://www.alibaba.com/trade/search?fsb=y&IndexArea=product_en&CatId=&SearchText=soundmend

¹⁴ See https://s.1688.com/selloffer/offer_search.htm?keywords=smengd&n=y&netType=1%2C11&encode=utf-8&spm=a260k.dacugeneral.search.0

¹⁵ See http://www.mercuryconvention.org/Portals/11/documents/meetings/COP4/submissions/Battery_Associations.pdf.

¹⁶ See http://www.weineng-gd.com/chp_yh.aspx

¹⁷ See https://s.1688.com/selloffer/offer_search.htm?keywords=%B6%F7%B3%DB+%D1%F5%BB%AF%D2%F8&n=y&netType=1%2C11&encode=utf-8&spm=a260k.dacugeneral.search.0

¹⁸ See <http://www.thumbcells.com/en/product/product.asp?bid=1&btX=SR+low%2Dmercury+silver+oxide+button+battery%20>

¹⁹ See https://s.1688.com/selloffer/offer_search.htm?keywords=%B6%AB%DD%B8%CA%D0%B5%CF%CD%D8+%D1%F5%BB%AF%D2%F8&n=y&netType=1%2C11%2C16

²⁰ See <http://www.szanderui.com/products/detail/168.html>

²¹ See https://s.1688.com/selloffer/offer_search.htm?keywords=%CF%E8%CA%A2%D4%B4+%D1%F5%BB%AF%D2%F8&n=y&netType=1%2C11%2C16

²² See https://s.1688.com/selloffer/offer_search.htm?keywords=%BD%F0%D3%ED+%B5%E7%B3%D8+%D1%F5%BB%AF%D2%F8&button_click=top&eareDirect=false&n=y&netType=1%2C11&from=offer_search

²³ See <http://www.dualwinpower.com/chanpinzhongxin/wugongyanghuayinniukoudianchi/>

²⁴ <https://shop1464052346954.1688.com/?spm=a26353.13687971.0.0.3e31e4f2hOlykc>

²⁵ See <https://jppbattery.en.made-in-china.com/product/LNsnCUrVczkh/China-Hot-Sale-Mercury-Free-Silver-Oxide-Battery-337.html>

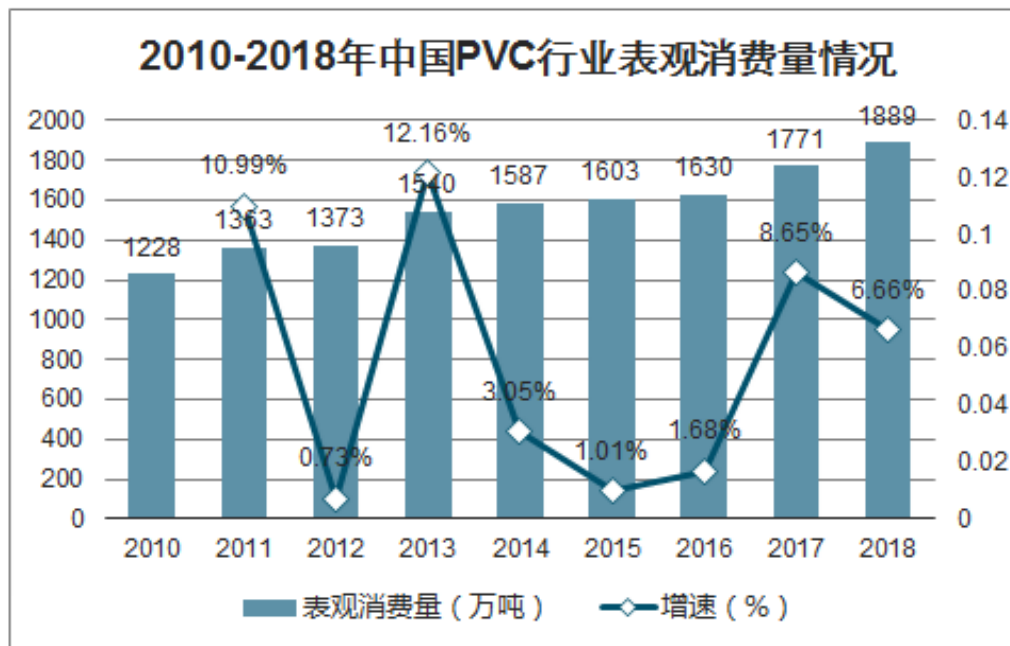
Accordingly, the global availability of mercury free zinc air and silver oxide button cell batteries is clear.

2. VCM

In China, notwithstanding the prohibition in the Convention against the construction of new mercury-using factories, the PVC sector is still growing, presumably through facility expansion. About 80% of China's PVC production is by the calcium carbide (mercury catalyst) process, and 20% is by the ethylene (non-mercury) process.

According to the Research Report released by Zhiyan Consulting, PVC production of has increased each year since 2010, as reflected in the chart below. In 2018, the production of PVC in China was reported as 18.89 million tons, an increase of 1.18 million tons or 6.66% over the previous year.

(Bar represents apparent production in units of 10,000 tons; Line % reflects rate of annual increase)



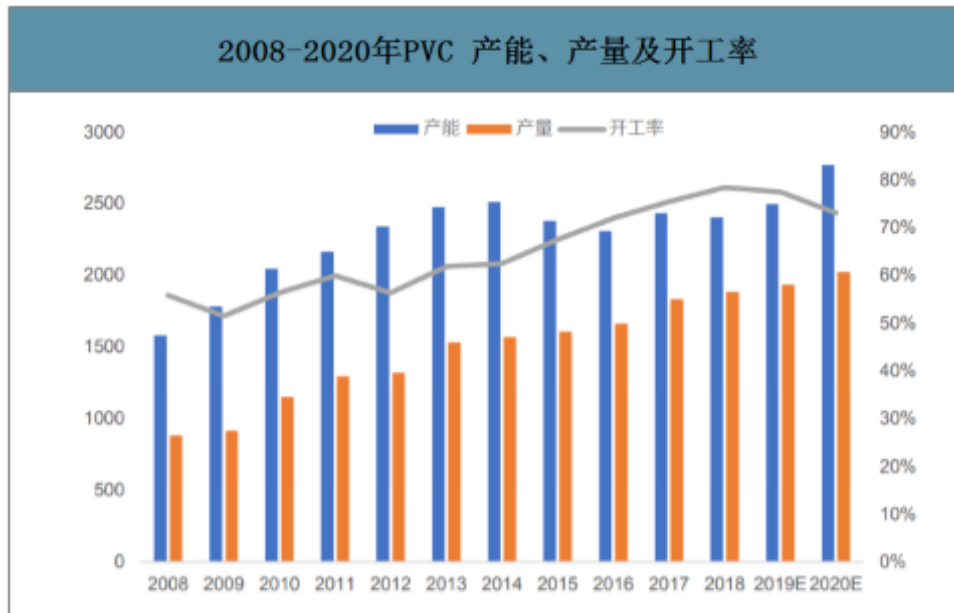
The number of domestic PVC production enterprises decreased from 94 in 2012 to 75 in 2018 (including enterprises with idle capacity), and the average scale increased from less than 250,000 tons / year to 320,000 tons / year.²⁶ The production capacity of the top 10 enterprises exceeded 30% of the national total, and the enterprises with large production capacity are mainly concentrated in northwest, north, and east China.²⁷

²⁶ <http://www.chyxx.com/industry/202002/831502.html>

²⁷ <http://www.cnmzppw.com/tv/20190807093806.html>

By the end of 2018, the total production capacity of PVC in China had reached 24.04 million tons.²⁸ In 2019, PVC production capacity in China continued to increase, reported as 26.18 million tons. According to the planned production increase schedule table, the domestic PVC production capacity will have reached 29.78 million tons by end of 2020.²⁹

(Blue Bar and Orange Bar represent production capacity and production output in units of 10,000 tons respectively. Line % reflects rate of capacity utilization)



China may have exported the mercury-based production technology. According to People's Daily and Xinhua news agency³⁰, Uzbekistan's largest PVC production project was officially completed in the industrial city of Navoi, central Uzbekistan on December 28, 2019.

²⁸ <http://www.chyxx.com/industry/202002/831502.html>

²⁹ https://www.sohu.com/a/373404993_120469235

³⁰ <http://world.people.com.cn/n1/2019/1230/c1002-31527557.html>, and picture is from <http://ce.cri.cn/20191230/9e115c71-4be5-c8f6-db68-22159b381f02.html>.



This project was undertaken as part of the "one belt and one road" initiative. The business contract was executed in August 2014 and construction started in September 2016.³¹ News about this project was also reported on the official Belt and Road Initiative website.³²

There is no mentioning of the type of PVC production process in the various news releases. However, a few project updates on the websites of the Chinese Calcium Carbide Industry Association (CCIAC)³³ and a company involved in the project, provided more details. For example, “Cohesion (Beijing) Technology Co., Ltd. provided technical support for environmental protection of the project in Uzbekistan”³⁴, and refers to the use of mercury on its website, as indicated in the box below.

³¹ The plant was constructed by China CAMC Engineering Co. And the local company is NAVOIYAZOT, according to <http://qikan.cqvip.com/Qikan/Article/Detail?id=667594854>.

³² <https://www.vidaiyilu.gov.cn/xwzx/roll/114004.htm>

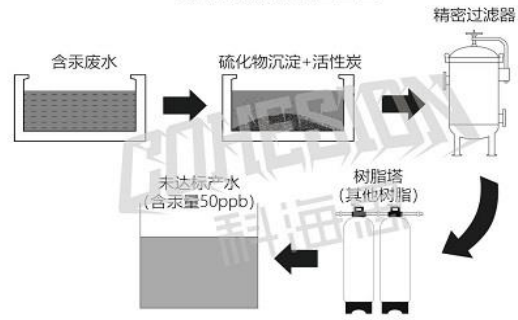
³³ <http://www.cciac.org.cn/view.asp?id=13510>; <http://www.cciac.org.cn/view.asp?id=18972>.

³⁴ https://www.sohu.com/a/329192637_503344

As an environment-friendly service provider for exploring green and new ecology, Cohesion actively responded to the international "PVC" project of China and Uzbekistan. Through detailed investigation, study and negotiation in the early stage, aiming at the problems of excessive mercury content in PVC plant wastewater discharge, poor effect of traditional treatment technology of mercury sulfide precipitation, difficult operation and high cost, Cohesion actively, steadily and orderly provided services to Uzbekistan "PVC" project with one-stop solution.

The content of mercury can be reduced to less than 0.1ppb on the basis of traditional treatment method by using the heavy metal mercury removal resin of Cohesion Tulsimer CH-95. Not only greatly improves the mercury removal accuracy, but also the heavy metal mercury removal resin of tulsimer ch-95 is not affected by the salt content in the wastewater, so as to ensure the efficiency of tulsimer ch-95 mercury removal resin. At the same time, due to the low water concentration of the resin, the resin will not be saturated within the service life (3-5 years), without backwash regeneration, stable and efficient, and reduce the comprehensive operation cost. It has brought obvious environmental and economic benefits to Uzbekistan PVC chemical industry and created a new type of environmental protection industry.

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