



Green Beagle

China chemical safety case study: Pollution from a phosphate fertilizer plant in Zhongxiang, Hubei Province

In the frame of the EU-funded project: Strengthening the capacity of pollution victims and civil society organizations to increase chemical safety in China (China Chemical Safety Project)

IPEN and Green Beagle

September 2014

Introduction

China produces nearly half of the world's phosphate fertilizer and exports approximately 20% of it to other countries.¹ The industry has grown rapidly despite the need for control emphasized in the 12th Five-Year Development plan, with a 36% increase in production between 2011 and 2012.² Hubei Province is one of the principal phosphate fertilizer production areas in China and the location of Dasheng Chemical in Zhongxiang City – the subject of this case study. The Dasheng Chemical case illustrates the harms from pollution and how liability and compensation can go terribly wrong.



Dasheng Chemical in Zhongxiang; photo by Caixin³

An old problem gets worse

In 1958, the Jinxiang Mining Bureau started to operate in Liuchong Village in Linkuang Town both of which are part of Zhongxiang City. In fact, the town that Liuchong belongs to was named Phosphate Mine Town (Linkuang Town) also. The mine brought some benefits to the local

village including a drinking water system and electricity. However, the mine also left pollution – though much less than what was to come in the future since the ores were shipped out of the town to other places for further processing.

After the mid-1990s, the Jinxiang Mining Bureau gradually withdrew from Liuchong as the productivity of the mine declined. Other owners gradually transformed the operation into a sulfuric acid line and a monoammonium phosphate line and Dasheng Chemical sharply increased production beginning in 2008 to more than 100,000 tonnes per year. That is when the pollution from the plant began to pose severe harm to the local people, crops, trees and animals.

Dasheng Chemical is located in the densest residential area of Niuchong village. There are 50 households within 600 meters of the plant and the immediate area also includes a large area of rice paddy fields, dry land, woods, and many domestic animals such as pigs and chickens.

Pollution impacts

Day and night air emissions from Dasheng Chemical began to coat houses and plants with white powder. Vegetables, fruit trees and other crops turned yellow and died, livestock reproduction suffered, and people reported nausea.^{4 5} As conditions worsened, pigs were born deformed and others simply died.⁶ Crops such as watermelons became inedible so that pigs would not eat them and regional purchasers labeled rice from the village as poisonous and refused to buy it.⁷ Farmers began a weekly protest at the factory to increase pressure on the company.



Phosphate dust covers plants in the area; photo by Marketplace⁸



Factory pollution damages rice in the fields; photo by Lin Shunmei



Deformed pigs appeared as pollution from the plant continued; photo by Boxun⁹

Two examples of residents in close proximity to Dasheng who suffered serious damage from the pollution include Wei Kaizu who raised pigs and Yu Dinghai who raised poplar trees near the plant. In fact, Dasheng discharged waste water and other mining wastes directly into ponds located on the pig farm. Together with other community members they pressured local government authorities to take action. In response to community requests, local government authorities conducted sampling and testing which indicated that the damage could be caused by the factory, in particular the harm suffered by Wei Kaizu and Yu Dinghai. As a result, the local

government authorities proceeded to coordinate a compensation agreement between the men and factory. In 2011, Dasheng Chemical agreed to pay Wei Kaizu ¥1.24 million (~€150,000) and Yu Dinghai ¥300,000 (~€36,000) due to the size of their operations and the substantial losses they had experienced. The company also agreed to annually compensate 20 villagers with ¥20,000 (~€2,400) each due to losses of crops, livestock, and poultry. However, in 2012, Dasheng Chemical refused to abide by the agreement.

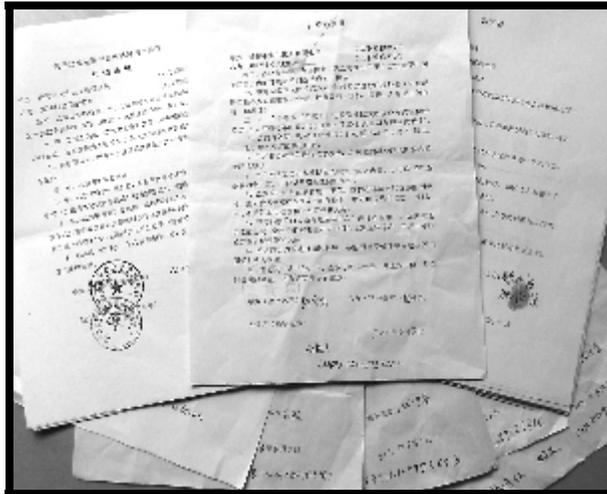


Photo from Hexun.com of compensation agreement between Dasheng Chemical and villagers¹⁰

From pollution victims to “extortionists”

As the pollution worsened other villagers also demanded a change in operation and compensation for their damages. The situation worsened when Dasheng Chemical refused to pay villagers their promised compensation. In 2012, outraged villagers started to go Beijing to appeal to the Central Government for intervention. In response, local government police officers arrested Wei Kaizu and Yu Dinghai for “extorting” the company.



Yao Chengying expresses anguish at the arrest of her husband for “extortion”; photo by Lin Jiyang

The “extortion” arrest triggered outrage and deep concern that any pollution victim justly compensated for damage could suffer even more severe harm by arrest. The event triggered the formation of a group of public-interest lawyers called the Environmental Lawyers Corp in

Wuhan City, Hubei Province. Project personnel also entered the case at this time. Continued reporting by the Project personnel helped draw the attention of journalists and contributed to the eventual freeing of the two men.

In April 2013, the “extortion” case went to court. Public interest lawyers presented the following evidence:

- Dasheng Chemical is a polluting facility with government records of violations
- The company did not possess legal documents for pollutant emission before operation, and even before 31 March, 2012 in violation of Chinese law
- The pig farm and poplar cultivation areas were damaged. The Linkuang Town government sent water samples from Wei Kaizu’s pond for testing and the result failed to meet national standards. The local authority for forestry verified that the death or damage of Yu Dinghai’s poplar trees could not exclude pollution causes.
- The villagers’ appeal is legal and could not be regarded as a menace.
- If the compensation is not appropriate, then the matter should be resolved in civil court, not criminal court.
- Other villagers signed compensation agreements, but only Wei Kaizu and Yu Dinghai were arrested.
- Many government officers got involved in the compensation negotiation, and if there is “extortion” then these officers are also guilty.



Defendants’ families wait outside court in Zhongxiang; photo by MEP Hubei Province¹¹

According to Chinese Criminal Litigation Law, the judge must issue a decision within one and a half months of a hearing. However, on the due date of 14 June, 2013, the court had not made any

judgment and asked for upper court for extension. According to the same law, an extension should not be for more than 1 month.



Cartoon from Hexun.com about pollution from Dasheng Chemical in Zhongxiang¹²

Violations and pollution

Project personnel examined the Environmental Impact Statement (EIS) document along with the legal document granting Dasheng Chemical permission for operation. The documents demonstrate that the company violated relevant Chinese laws. In fact, the local government Environmental Protection Bureau (EPB) issued the permission to construct the modified facility four months *after* major construction had already begun. In April 2011, when the EPB issued the environmental permission for operation, Dasheng Chemical had *already operated for one year*. Finally, the EPB awarded the company a pollution emission permit *four years after* the factory began polluting the air, land, and water.

Villagers told Project personnel that the EPB issued several violations to Dasheng Chemical and ordered it to improve its environmental performance. Between 2010 and 2012, EPB monitoring showed that air emissions of the factory exceeded regulatory limits. In April and July, 2011, the EPB ordered the Plant to improve its air pollution control equipment and clean up the phosphogypsum residues. In July 2011 and July 2012, the EPB fined the Plant ¥40,000 (~€5,000) and ¥100,000 (~€12,000) for pollution. In February, 2012, the EPB listed the factory as a risky facility for arsenic pollution.

Project documentation of pollution impacts

Project personnel investigated pollution impacts in a series of field trips. Dasheng Chemical was known to emit fluorides and sulfur dioxide that directly hurt trees and crops. According to villagers' descriptions and photos, leaves and flowers of plants would fall after contact with factory pollution and fruit trees were the most sensitive. Sulfur dioxide has caused respiratory problems in pigs and humans. Recently, the sulfur dioxide and fluoride emitted by the factory damaged 300 mu (200,000 m²) of paddy field and dry land, and resulted in at least two people fainting from the fumes.

Because the factory is located on elevated land its waste water is discharged to all the surrounding land area. Project personnel found two discharge pipes and one open sewer from the factory, directly connected to surrounding ponds and a field. The water is usually brown and green colored. Samples have been taken for testing.

An ecological impact is the danger of geological collapse and disappearing ground water. According to villagers, many years ago, the river flowing through the village was much wider than it is now and they suspect mining activity is a possible cause.



Waste pipe from Dasheng chemical dumps water with high arsenic levels; photo by Xie Xinyuan

Dasheng Chemical has two slag piles. The old one is far from the factory and adjacent to an agricultural field without any pollution control measures. The new one was built in 2011 and is located adjacent to the facility. Project personnel took slag samples and discovered arsenic levels in the new pile of 58 ppm and 180 ppm. Arsenic is much lower (4.4 ppm) in the slag of old pile. Phosphate levels in the new pile were 36,500 ppm and 49,100 ppm. However, no phosphate was detected from the old pile. It is likely that over time arsenic and phosphate from the slag piles has

dispersed to the surrounding environment. Project personnel also sent leachates from the new slag pile for third-party testing. The results show that fluoride levels of 1360 ppm which is more than 900 times higher than the national standard on surface water. Arsenic levels of 17.2 mg/L are 172 times higher than the national standard on surface water. In addition, the arsenic level is 3.4 times higher than the national standard on the leaching property of hazardous waste.



A new dump for phosphate waste with no treatment and direct environmental exposure; photo by Xie Xinyuan

Inorganic arsenic is a known human carcinogen with links to lung, skin, and bladder cancers.¹³ Studies of human exposure show increased incidence of lung, liver, and heart diseases, lung cancer, and infant mortality.¹⁴ Arsenic exposure in humans is also associated with diabetes.¹⁵ Low to moderate exposures in humans are associated with skin lesions, high blood pressure, and neurological dysfunction.¹⁶ Arsenic exposure is correlated with lower IQ in children.¹⁷

Cancer is more and more prevalent in Liuchong village. So far, 22 residents have been diagnosed with cancer and 18 of these patients have already died. In this sense, the tragedy unfolding in Zhongxiang mirrors similar villages throughout China. During China's rapid industrialization over the last 30 years, cancer rates have increased 80%.¹⁸

Conclusion

The pollution tragedy in Zhongxiang provides a striking example of pollution, violation of law, and environmental and human health impacts. The arrest of rightfully compensated victims under invented charges of “extortion” further sharpens the public debate over private sector responsibility and enforcement of Chinese law. Finally, this case study, like many others raises deeper questions about the true cost of industrialization.

The Zhongxiang phosphate fertilizer study provides opportunities for improvements in several areas:

Private sector waste management practices

Manufacturers should take responsibility for the full lifecycle of their operations – and that includes wastes generated during industrial processes. In the Dasheng Chemical case, the company does not appear to comply with Chinese law and pollutes the surrounding communities with impunity. Although the local EPB has recognized the problem and ordered the Plant to improve the situation Project personnel observed that hazardous waste piles are freely accessible to children and the public and there are no pollution control facilities there except a hardening pond which was not built until May 2013. Companies should also take aggressive measures to prevent formation of wastes in the first place. Finally, China is a Party to the Basel Convention which obligates Parties to take appropriate measures to ensure that the generation of hazardous wastes and other wastes is reduced to a minimum.

Enforcement of Chinese laws

Compensation as a result of pollution is a legal right awarded by Chinese law (Clause 124 of the General Provisions of Civil Law). This should be protected from abuse and false charges. The EIS and environmental permission for operation of the Dasheng Chemical Plant demonstrate violations of factory operation. In addition, the documents disclose two more important issues: first, the stakeholder survey does not represent authentic local opinions as required by law; second, there 46 more households located within 600 meters of the factory which should trigger legal action to have the environmental permission for the operation to be withdrawn. Finally, according to local villagers, the slag piles used by Dasheng Chemical occupy a large area of land, which is actually rented from farmers. This permanently changes the usage of the land, damaging its capacity to grow crops. This may have legal consequences if the company is found to be illegally occupying agricultural land.

Information disclosure

Public right to know is a key principle of chemical safety but the community was never informed about the identity or possible danger of tons of toxic metals emitted into the air and openly dumped in ponds adjacent to farmland. Public access to data about plant emissions including wastes should be regularly provided via an accessible, free, pollutant release and transfer registry.

Effective remediation

Dasheng Chemical should take responsibility for contamination resulting from manufacturing activities including financial support for independent assessment of pollution to air, land and water, and subsequent cleanup.

Media reports

China's toxic harvest: A "cancer village" rises in protest

Marketplace, US National Public Radio

<http://www.marketplace.org/topics/world/chinas-toxic-harvest-cancer-village-rises-protest>

<http://biweekly.isvoc.com/381803.html>

<http://finance.jrj.com.cn/industry/2013/01/23232914981701.shtml>

<http://www.epochtimes.com/gb/12/12/29/n3764257.htm>

<http://365jia.cn/news/2013-04-29/3089A1641BF67646.html>

<http://news.hexun.com/2013-01-24/150504990.html>

<http://bbs.tianya.cn/post-828-365237-1.shtml>

<http://www.hero.ngo.cn/yntt/197.html>

<http://news.qq.com/a/20130429/000080.htm>

<http://finance.sina.cn/?sa=t74d10194098v39>

<http://boxun.com/news/gb/yuanqing/2013/03/201303122355.shtml>

<http://magapp.caixin.com/2013-04-07/100510295.html>

<http://www.mzyfz.com/cms/minzhuyufazhizazhi/jujiaoyuzhuanti/html/696/2013-07-30/content-823201.html>

http://www.hbepb.gov.cn/hbfg/fzdt/201305/t20130506_60852.html

About the China Chemical Safety Project

This is an EU-funded project of IPEN with partner Green Beagle that aims to strengthen the capacity of civil society organizations and communities impacted by pollution to increase chemical safety in China. The Project (also known as the China Chemical Safety Project) is being implemented in China over two years with total EU funding of €344,580 and EU contribution of 77.84% of the total cost.

The Project includes:

- Improving capacities of impacted communities and civil society organizations for involvement in policy making
- Training on public participation in environmental impact assessment
- Generating new publicly available data about pollution and impacted communities that contribute to increased implementation of local and national chemical safety policies
- Raising awareness on emissions-related pollution



European Union

Strengthening the capacity of pollution victims and civil society organizations to increase chemical safety in China (China Chemical Safety Project) is funded by the European Union. The contents of this report are the sole responsibility of the IPEN and Green Beagle and can in no way be taken to reflect the views of the European Union.

The European Commission is the EU's executive body. "The European Union is made up of 27 Member States who have decided to gradually link together their know-how, resources and destinies. Together, during a period of enlargement of 50 years, they have built a zone of stability, democracy and sustainable development while maintaining cultural diversity, tolerance and individual freedom. The European Union is committed to sharing its achievements and its values with countries and people beyond its borders."

Delegation of the European Union to China, 15 Dongzhimenwai Dajie, Sanlitun, 100600, Beijing Telephone: + 86-10-84548000 Fax: + 86-10-84548011
www.eu-in-china.com

In addition, IPEN would like to acknowledge that this document was produced with financial contributions from the Swedish International Development Cooperation Agency through the Swedish Society for Nature Conservation (SSNC), along with other donors. The views herein shall not necessarily be taken to reflect the official opinion of any of these donors, including SSNC or its donors.

References

- ¹ <http://www.marketplace.org/topics/world/chinas-toxic-harvest-cancer-village-rises-protest>
- ² <http://www.greenpeace.org/eastasia/Global/eastasia/publications/reports/food-agriculture/2013/Living%20with%20Danger%20report.pdf>
- ³ <http://magapp.caixin.com/2013-04-07/100510295.html>
- ⁴ <http://www.epochtimes.com/gb/12/12/29/n3764257.htm>
- ⁵ <http://www.marketplace.org/topics/world/chinas-toxic-harvest-cancer-village-rises-protest>
- ⁶ <http://www.marketplace.org/topics/world/chinas-toxic-harvest-cancer-village-rises-protest>
- ⁷ <http://www.marketplace.org/topics/world/chinas-toxic-harvest-cancer-village-rises-protest>
- ⁸ <http://m.kanzhongguo.com/node/494124>
- ⁹ <http://boxun.com/news/gb/china/2012/12/201212252303.shtml>
- ¹⁰ <http://news.hexun.com/2013-01-24/150504990.html>
- ¹¹ http://www.hbepb.gov.cn/hbfg/fzdt/201305/t20130506_60852.html
- ¹² <http://news.hexun.com/2013-01-24/150504990.html>
- ¹³ Agency for Toxic Substances and Disease Registry (1992) Toxicological profile for arsenic, US Public Health Service <http://www.atsdr.cdc.gov/ToxProfiles/TP.asp?id=22&tid=3>
- ¹⁴ States JC, Barchowsky A, Cartwright IL, Reichard JF, Futscher BW, Lantz RC (2011) Arsenic toxicology: Translating between experimental models and human pathology, Environ Health Perspect doi:10.1289/ehp.1103441 <http://ehp03.niehs.nih.gov/article/citationList.action;jsessionid=766E1CABBFF4B6A6B60EE9F5CF80F924?articleURI=info%3Adoi%2F10.1289%2Fehp.1103441>
- ¹⁵ Kim Y, Lee BK (2011) Association between urinary arsenic and diabetes mellitus in the Korean general population according to KNHANES 2008, Sci Total Environ 30 June
- ¹⁶ Chen Y, Parvez F, Gamble M, Islan T, Ahmed A, Argos M, Graziano JH, Ahsan H (2009) Arsenic exposure at low-to-moderate levels and skin lesions, arsenic metabolism, neurological functions, and biomarkers for respiratory and cardiovascular diseases: review of recent findings from the Health Effects of Arsenic Longitudinal Study (HEALS) in Bangladesh, Toxic Appl Pharmacol 239:184 - 192
- ¹⁷ Dong J, Su SY (2009) The association between arsenic and children's intelligence: a meta analysis, Biol Trace Elem Res 129:88 - 93
- ¹⁸ <http://www.marketplace.org/topics/world/chinas-toxic-harvest-cancer-village-rises-protest>