



Green Beagle

China chemical safety case study: Likeng incinerator in Guangzhou, Guangdong 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

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Introduction

Environmentally sound waste management is a key component of chemical safety policy and highly relevant to national obligations under the Stockholm Convention. Since the establishment of the Eleventh Five-Year Plan, China has started aggressively promoting municipal waste incineration as a primary waste management strategy. However, there is a large mismatch between the strategy of burning municipal waste and the actual high water content of the waste since ~70% is wet waste primarily from food. As a result, waste incineration in China typically involves adding coal so that the waste material will actually burn. This led one journalist specializing in waste issues to call Chinese waste incineration facilities, “...*very dirty coal-burning power plants with some trash thrown in.*”¹ A cheaper, less polluting alternative would include waste separation and composting of food waste, with possible biogas fermentation.



The Likeng incinerator sits in the middle of food-growing farm land; photo by Chen Liwen

Another factor surrounding waste management issues concerns public participation in decisions on waste management practices including the siting of incineration facilities. This is actually a legal requirement under Chinese law, but has been not been adequately implemented. As a result, large community protests have occurred against proposed incineration facilities. Public concerns include the mismatch between waste composition and burning noted above along with valid concerns about pollution emissions. The debate has technical issues as well as social, environmental, and health risks.

This case study concerns a clash between a waste-to-energy incinerator and a community suffering from pollution. More fundamentally, the case study illustrates what happens when techniques and obligations to implement a relevant international treaty are ignored. At issue is the Likeng waste-to-energy incinerator built in a key Chinese province and operated by Veolia – the large French transnational. State media described the facility as one of the Veolia’s “*major operations in the Chinese mainland*” and Veolia claims to be the leading international operator in the Chinese waste management sector.^{2 3} The Likeng incinerator is located in Yongxing Village, Longgui Town, and Baiyun District of Guangzhou in Guangdong Province.⁴ Guangzhou is the capital of Guangdong Province and serves as a key national center for trade and transportation. The reality of the Likeng incinerator, its impact on the surrounding community and the Province, and the implications for implementation of the Stockholm Convention will be the subject of this case study.

Veolia builds and operates but Guangzhou owns it

The large French transnational corporation, Veolia, built the Likeng waste-to-energy incinerator and started operations in 2006. State media promoted the incinerator by claiming that it would use “*Danish clean garbage power transforming technology*” and stated that, “*At a cost of 970 million yuan (\$125 million), the Likeng Garbage Incineration Power Plant will be able to incinerate more than 2,000 tons of domestic waste per day, almost one fifth of the city's total.*”⁵ To add to the expectations, “*Phase two of the Likeng Garbage Incineration Power Plant is expected to rank as the country's number one plant of its kind in terms of output capacity.*” The company has a 10 year contract for operation and receives 50% of the power sales if power generation exceeds the designed level.⁶ The company also built and operated the large 84 hectare Xinfeng landfill in Guangzhou with operations starting in 2003 and an eight year contract.⁷ In 2007, Veolia noted that the Likeng incinerator received a number five ranking among the top ten waste-to-energy plants, “*according to the United Nations and China’s National Development and Reform Commission.*”⁸

The Likeng incinerator burns about 1000 tonnes of garbage per day, generating 320 – 350 MW power – 80% of which is exported.⁹ Like other incinerators in China, Likeng is trying to burn wet waste that is about 60– 70% organic.¹⁰ A World Bank waste management consultant notes that, “*During the rainy season, however, it is often necessary to add fuel to the wastes in order to sustain combustion.*”¹¹ Coal is the most common, cheap and available fuel to add to incinerators in China, which led one journalist specializing in waste issues to call Chinese waste incineration facilities, “*...very dirty coal-burning power plants with some trash thrown in.*”¹²

广州市第一资源热力电厂一分厂

项目	1# 在线值	2# 在线值	1# 小时 均值	2# 小时 均值	国际 小时 均值
氯化氢 HCl	34	22	24	27	75
二氧化硫 SO ₂	33	44	25	40	260
一氧化碳 CO	6	10	4	10	150
氮氧化物 NO _x	150	140	144	149	400
烟尘 DUST	3	4	3	4	80

2013年08月04日 00:47:10

The Likeng incinerator monitoring screen seems to indicate full compliance with legal requirements, though a small fraction of pollutants are shown, photo by Fan Yanfen

The problems begin

Though initially accepted by the community, concerns over the incinerator mounted as bad odors and health problems began to emerge. As one business owner noted, *“More people are considering leaving here. We can smell the thick stench of burning trash, and it is getting stronger every day.”*¹³ The pollution also extended to the drinking water. One older resident of the village told China Daily in 2009 that, *“We already have to get drinking water from outside of the village. The water here can only be used for irrigating the crops. No one feels safe drinking from the local wells anymore.”*¹⁴ The newspaper went on to report on a poll taken in the village by the Guangdong Situation Study and Research Center that found that, *“...92 percent felt the plant posed a serious danger to their health and the local natural environment, while 97 percent said they opposed its construction. Almost all respondents said they opposed the incinerator projects over fears about dioxins.”*¹⁵

The negative community response to the incinerator reflected the dramatic change in health statistics after the incinerator began operation. In the six years between 1989 and 2005, only nine people died of cancer in a nearby village of 8000 people.¹⁶ In contrast, from 2005 – 2009, after the incinerator began operation, 42 people died of cancer.¹⁷ Common ailments included nasopharyngeal cancers and asthma. An analysis of health records from three villages near the incinerator found zero cases of respiratory cancer between 1993 and 2005.¹⁸ However, three years after the incinerator began operating, 13 respiratory cancer cases were found.¹⁹

Local government officials and Veolia insisted that the incinerator operated according to EU standards and that the high temperature used in the facility would destroy all pollutants including dioxins and furans. However, a 2009 news investigation of the ashes surprisingly found intact rope, cloth, red plastic bags, and shoes, indicating incomplete combustion.²⁰

Project personnel learned that the national Ministry of Environmental Protection had actually refused the incinerator’s Environmental Impact Assessment (EIA) because the proposed facility would be located too close to drinking water sources. Tragically, after 2008 the Ministry gave the right to decide about the permit to Guangdong Provincial authorities and they approved it.

A survey backfires

The local government response to community concerns about health involved a survey by the Guangzhou Centers for Disease Control (CDC) in 2010. The survey results appeared to show that since the incinerator began operation, the number of cancer cases and deaths had not increased. Guangzhou city officials used the report to attempt to calm growing concerns with the Likeng incinerator while at the same time planning a major expansion of the facility.

The only problem was that an official from the CDC later admitted that its officials and staff, *"...never visited a single household during the week-long survey in December."*²¹ The CDC official told China Daily that, *"Due to the time limit, the center jumped to the conclusion after the center and local police studied only the death and cancer patients' medical records from local medical organizations, finding no increase of cancer cases caused by operation of the garbage incinerator."*²²

Guo Weiqing, a Sun Yat-sen University professor, recounted that, *"Many villagers have complained about serious air and water pollution after the incinerator was put into operation, but none of the government departments have handled their complaints in the past years...Local government departments have been told how many people have contracted cancers or have been killed after the Likeng project was put into operation. It is not difficult for them to visit local households for the survey."*²³ Zhao Zhangyuan, a researcher from the Chinese Environmental Research Institute, called the survey, *"...incompetent, as none of the local households has been visited by relevant officials and personnel for the special survey."*²⁴ Zhao urged officials to shut the incinerator down, but instead it was expanded.



Injured Likeng incinerator plant worker receives treatment after the facility exploded, photo by Xiao Li²⁵

Credibility about the safety claims of the Likeng incinerator suffered further in 2010 when a pipeline exploded, seriously injuring five workers. Veolia quickly stated that the accident was not an indicator of faulty technology and claimed that, *"This garbage incinerator has been operating very well since 2005. It was designed as an environmental-friendly project."*²⁶ A frustrated community responded predictably. *"We don't trust the so-called state-of-the-art facilities for garbage incinerators... No one can ensure the incinerator's safety in operation, let alone the great damage it poses to people's health and the environment."*²⁷

Stockholm Convention obligations and incinerator decisions

Though hidden in the background, the decision to construct and operate the Likeng incinerator is directly connected to Stockholm Convention obligations and recommended techniques. China ratified the treaty in 2004 and is legally bound to implement it. However, to our knowledge no consideration of Convention obligations or techniques occurred in the decision-making on the Likeng incinerator.

The Stockholm Convention lists “*Waste incinerators for municipal, hazardous and medical waste and sewage sludge*” as source categories that have the potential for comparatively high formation and release of dioxins, furans, hexachlorobenzene, PCBs, and pentachlorobenzene – all highly toxic harmful substances (Please see Annex 1 and Annex 2 for Stockholm Convention obligations and recommended techniques). Treaty obligations include the requirement to develop and implement an action plan to minimize and where feasible ultimately eliminate these substances and publically report the results. In addition, governments are also obliged to promote the development of substitute or modified materials, products and processes to prevent the formation and release of these substances – all highly relevant to decisions about whether to build incinerators.

Convention guidelines are quite explicit about exploring less-polluting options before building waste incinerators:

*“When considering proposals to construct new waste incinerators, priority consideration should be given to alternatives such as activities to minimize the generation of waste, including resource recovery, reuse, recycling, waste separation and promoting products that generate less waste. Priority consideration should also be given to approaches that prevent the formation and release of persistent organic pollutants.”*²⁸

The treaty notes that when a proposed incinerator is compared with an alternative, “*Health, safety and environmental impacts of proposed alternatives should be compared with the corresponding impacts of the originally proposed facility.*”²⁹

Convention guidelines include important principles of waste management that governments should implement. These include, “*the source reduction principle; the integrated life cycle principle; and the principle of recovery of reusable and recyclable components, to the greatest possible extent.*”³⁰ The Convention recommends “*...separating at the source those wastes that can be composted, reused or recycled.*”³¹ Treaty guidelines even predict how incinerators undermine recycling and waste reduction efforts: “*...the decision to construct a new large-scale waste treatment facility can undermine efforts at waste reduction and waste-derived resource recovery. Those who invest in these new facilities will often face pressures to assure sufficient incoming waste in order to recover their investments. When this happens, the new facility can sometimes serve as a counterforce and as a disincentive to effective waste reduction efforts.*”³²

Finally, Convention guidelines state that governments should prioritize waste reduction before incinerator construction, in part to avoid the loss of resources and also to protect human health. “*...a society should give careful consideration to the full range of waste management options and considerations before reaching a decision to make a large-scale investment in the construction of any new incinerator, a new sanitary landfill, mechanical or biological treatment,*

*or other similar investments, or to retrofit an existing facility for these purposes.”*³³ In China, where the percentage of wet food waste is particularly high, the Guidelines state that, *“If the mixed waste contains a large percentage of vegetable waste, the possibilities for composting or anaerobic digestion should be examined.”*³⁴

Despite its high relevance to waste management practice and the release of polluting substances, no public discussion of these highly relevant Stockholm Convention obligations and techniques occurred before constructing the Likeng incinerator. To our knowledge, Stockholm Convention obligations and recommended techniques were ignored in the decision-making processes to develop waste management policies in Guangzhou, including the Likeng incinerator.

Likeng triggers opposition to a proposed incinerator in Panyu

In 2009, a proposal to build a 2000 tonne/day incinerator in Panyu triggered protests that cited concerns raised by the community surrounding the Likeng incinerator.

The Guardian reported that one of the main complaints about the proposal was inadequate consultation with the community about the incinerator. The newspaper also noted that, *“Others were from Likeng, which is in the process of expanding an incinerator despite concerns among nearby residents that it will lead to an increase in cancer cases. The government has said such claims are groundless.”*³⁵ There was no mention of Stockholm Convention obligations or techniques in the decision-making process or planning of the proposed Panyu incinerator.



Hundreds of protesters gather outside of Guangzhou city offices to protest the planned incinerator; photo from China Digital Times³⁶



Resident protesting the incinerator holds a sign saying, “oppose garbage incineration, protect green Guangzhou”; photo by Reuters/Stringer³⁷



Residents of all ages protested the planned incinerator in Panyu; photo from China Digital Times³⁸



Protester holds up sign saying, “I do not want to be represented by others” – a comment indicating a desire to participate in decision-making rather than have the element of public participation neglected or faked ; photo from China Digital Times³⁹

The survey experience in the Likeng community reinforced community suspicions and decreased the credibility of city officials. Residents in Panyu knew this story and told reporters that, “*The government told us there won't be any pollution, but we don't believe them.*”⁴⁰



Hundreds of protesters gather outside of Guangzhou city offices to protest the planned incinerator; photo from China Digital Times⁴¹

Local authorities later suspended plans for the Panyu incinerator. While the protests probably played a role in the decision, another factor concerned new information about government corruption that emerged about Lu Zhiyi, deputy secretary-general of the Guangzhou city government. A netizen publicly revealed that, “... *Vice Secretary General Lu Zhiyi's brother was the manager of elevator and equipment manufacturer Guangri Group -- wholly owned by the Guangzhou municipal government - and that his son had been hired as manager of the procurement department of a company called Guangzhou Environmental Investment. The brother's company had signed a BOT (build-operate-transfer) contract with the Guangzhou government to be responsible for the investment, construction, operation and maintenance of Guangzhou's incineration projects while the son's company was launched as a subsidiary of Guangri Group to focus on incinerator construction.*”⁴² Lu Zhiyi denied wrongdoing but the city government cancelled the project shortly thereafter.

Protests against Likeng expansion add to opposition in Foshan

In 2010, about 300 villagers from Yongxing near the Likeng incinerator gathered in front of the Guangzhou government office to voice their opposition to the plant operation and expansion.⁴³ The villagers claimed that about 40 people had died of cancer since the incinerator began operation in 2006.⁴⁴ They said that, “*At night, we don't dare open our windows because the air is so bad.*”⁴⁵



Residents protest the expansion of the Likeng incinerator on 19 January 2010; photo by enxinada⁴⁶

The concerns expressed by the Likeng-affected community merged with anger over a proposal to build another incinerator in nearby Foshan in the Gaoming district. This resulted in a protest by about 400 residents in the Gaoming district.⁴⁷ Again, there was no mention of Stockholm Convention obligations or techniques in the decision-making process or planning.



A woman holds a placard that reads "Protect the pure land of Gaoming" during a protest against plans to build an incineration plant in Foshan, Guangdong province; photo by China Daily/Guo Jijiang⁴⁸

Getting data about environmental impact assessment

A key role of Project personnel has been to pursue information relating to the Environmental Impact Assessment (EIA) of the Likeng facility. Green Beagle began by formally requesting the Guangzhou Environmental Protection Bureau (EPB) to provide the EIA along with operation data from 2006 to 2012 as required by Chinese law. The EPB provided partial information on incinerator air emissions from 2006 to 2009, but refused to release the EIA report and the other three years' emission data as required by law. In addition, the data provided by the EPB did not include information on emissions of heavy metals and dioxins – though monitoring of these substances is required by law.

In 2012, public interest colleagues at the Wuhu Ecological Center requested environmental authorities to disclose emission monitoring data of 122 solid waste incinerators throughout China. However, only one third of these incinerators supplied any data, and only 10% of them provided any dioxin emission data.⁴⁹

In 2012, Green Beagle, in collaboration with Friends of Nature and the Center for Legal Assistance to Pollution Victims, filed suit against the Guangzhou EPB in the Yuexiu Court to obtain the EIA for the Likeng facility. Before the hearing in January 2013, the EPB released three more years of incomplete emissions data but continued to withhold the EIA in violation of Chinese law. Due to the widespread controversy over the Likeng incinerator and other proposed facilities, news media as well as impacted farmers paid close attention to the proceedings.⁵⁰

In March 2013, the Yuexiu Court ruled that the EPB was in violation of the requirement to reply to the EIA application within 15 business days as required by law. However, the court ignored the fact that the EIA was never actually delivered, even past the 15 business day time limit. The court also rejected the claim that the EPB should pay for travel costs incurred to pursue the matter. As the Court did not require delivery of the EIA as required by law, Green Beagle promptly appealed to the Guangzhou Court to obtain the EIA. In addition, Project personnel applied to obtain the EIA for the expansion phase of the Likeng incinerator.

Another incinerator proposal

Despite the serious issues raised by the Likeng incinerator, the previous outpouring of public opposition, and the revelations of government corruption, another incinerator proposal emerged in 2013 for the Huadu district. At least ten thousand people gathered to protest the proposal, which was to build the facility in a leather-goods manufacturing area – one that residents claimed already had significant pollution problems.⁵¹ As one father stated, *“The incinerator is only 500 metres from my home. I have two children and I don't want them to develop health problems in a few years... Over half of the world's handbags are made here - Shiling is polluted enough and can't handle an incinerator.”*⁵² So far, the facility has not been built. However, the South China Morning Post noted the capacity of the Likeng incinerator at 1000 tonnes per day and that Guangzhou city was planning to build five new incinerators in 2015 to handle the 18,000 tonnes of waste produced each day in the city.⁵³ There was no mention of Stockholm Convention obligations or techniques in the decision-making process or planning.



Thousands of residents protest a planned incinerator in Huadu district; photo by SCMP⁵⁴

The Likeng EIA report and pollution data

Understanding the rationale for incinerator construction and its emissions became an important element of Project activities on the case. Project personnel applied for the EIA of the Likeng incinerator along with emissions data. In 2012, Project personnel applied for emission data from 2006 – 2012 and in 2013 requested data from 2012 – 2013. In response to requests, the Guangzhou Environment Protection Bureau claimed that it was not responsible for releasing the EIA report. This violates Chinese law and Project personnel pressured for release of the information. Finally in 2013, the Guangdong Provincial Environment Protection Bureau released the 600-page Likeng incinerator EIA for the expansion phase of the facility. In addition, after further requests from Project personnel, the Guangzhou Environment Protection Bureau released emission data from 2012 – 2013. This time, the agency included all of the substances required by the National Incineration Emission Control Standard. The report will be useful to see how the second phase of the Likeng incinerator is different from the first one as it describes pollution control, specific technologies, and also public participation. Unfortunately, the report just provides the conclusion of “public support” without providing actual community questionnaires as required by law. In previous cases the lack of full disclosure in this section has usually indicated that the public participation section contains fake “support”. The new emissions data contained two dioxin testing results that both met Chinese standards but failed to meet EU2000 limits as claimed by the facility. To raise public awareness, the Project shared both the EIA and the new emissions data broadly via Weibo. Overall, the information release demonstrates the impact of the Green Beagle lawsuit with Guangzhou Environmental Protection Bureau on information disclosure in Guangdong Province.

During this time period, Project personnel worked very closely with local pollution victims by sharing all the data obtained through the legal processes and providing guidance on how to monitor incinerator operation. Local residents participated in the Shenzhen EIA meeting hosted by the Project and shared information and monitoring samples for follow-up.

The role of information

The successful push for information that should be legally available resulted in four key results:

- A close working relationship with impacted community around the Likeng incinerator;
- Successfully promoting the Guangzhou EPB to monitor and test incineration emissions as required by the National Incineration Pollution Control Standard; this provided the public with the basic emissions situation of the Likeng incinerator;
- Public education of local residents, environmental NGOs and journalists about the key issues involved in incinerator decision-making, EIA processes, and emissions data so that more local people can work to monitor this incinerator in the future and provide information to other communities facing incinerator proposals;
- Stimulation of the Guangzhou EPB and the Guangdong Provincial EPB to be more active in disclosing information.

Recently adopted incinerator emission standards will apply to existing facilities after 2016. Further investigation of emissions data will reveal how the law is being implemented.

Conclusion

The Likeng case study provides opportunities for improvements in several areas:

An overhaul of waste management policy

China has promoted and developed the burning of mixed waste since the Eleventh Five-Year plan. This is very dangerous because mixed waste burning not only produces pollution and health impacts on people, but also prevents recycling and the road toward zero waste. Ironically, there is a large mismatch between this strategy and the actual high water content of the waste as ~70% is wet waste primarily from food. As a result, waste incineration in China typically involves adding coal so that the waste material will actually burn, resembling a dirty coal-burning power plant. The waste management policies that lead to burning of mixed waste should be modified to promote greater waste reduction at source, waste separation, composting, and citizen involvement in recycling. Finally, the obligations and recommendations of the Stockholm Convention should serve as a guide to help craft policies more in line with efficient waste management that satisfy the requirements and the spirit of the treaty.

Expedited implementation of Stockholm Convention obligations and recommended techniques

Stockholm Convention obligations are quite explicit about exploring less-polluting options before building waste incinerators, stating that, “*priority consideration should be given to alternatives such as activities to minimize the generation of waste, including resource recovery, reuse, recycling, waste separation and promoting products that generate less waste. Priority consideration should also be given to approaches that prevent the formation and release of persistent organic pollutants.*” Explicit implementation of these guidelines, with public participation could help develop a unified policy that minimizes harmful pollution while accomplishing efficient waste management – without construction of municipal waste incinerators. This is also consistent with Stockholm Convention guidelines that clearly state, “*...a society should give careful consideration to the full range of waste management options and considerations before reaching a decision to make a large-scale investment in the*

construction of any new incinerator, a new sanitary landfill, mechanical or biological treatment, or other similar investments, or to retrofit an existing facility for these purposes.” In China, where the percentage of wet food waste is particularly high, the Guidelines state that, *“If the mixed waste contains a large percentage of vegetable waste, the possibilities for composting or anaerobic digestion should be examined.”* Stockholm Convention obligations and guidelines should be implemented on an expedited basis.

Civil society participation in Stockholm Convention implementation

The Stockholm Convention obliges Parties to promote and facilitate public participation in national efforts to address POPs substances formed and released by incinerators. However, this aspect of Convention implementation is lagging in China. As seen from this case, without public participation, the Stockholm Convention cannot be well implemented in China.

Information disclosure

Public right-to-know is a key principle of chemical safety. However, this case demonstrates that there are many blind areas for incinerator pollution control in China. The government and industries alone cannot solve the problem. Without public participation, the commitment that the Chinese government made to implement the Stockholm Convention cannot be met. The key step to encourage and mobilize public participation is to release all existing information to the public and clearly admit what information may be missing, so that the ordinary people can be cautious to potential harm and concerned communities or environmental group can take action to help fill the gaps. In addition, to let people know all information about POPs- including those formed and released by incinerators- is an obligation of implementing the Stockholm Convention. This must be corrected.

Polluter pays

In this case, the Guangzhou city government is the Likeng incinerator owner and Veolia has a 10 year contract for operation and receives 50% of the power sales if power generation exceeds the designed level. Neither party has paid the true cost of the Likeng incinerator, which would include both environmental and public health damage. China needs a functioning polluter pays system so that polluting facilities are not simply externalizing their costs onto the population.

Liability and compensation

Liability and compensation is another key principle of chemical safety.⁵⁵ In 2010, the Governing Council of the United Nations Environment Programme (UNEP) developed guidelines for national legislation on liability and compensation.⁵⁶ China participated in the meeting and its consensus decision to endorse the guidelines. The decision acknowledges Rio Principle 13 and seeks to operationalize Rio Principle 16, the polluter pays principle. Company responsibilities include strict liability for damages either by commission or negligence. The Guidelines grant both individuals and public authorities the right to claim compensation, including for damage to property and economic loss. According to Chinese Civil Law, for environmental pollution cases if the plaintiff can prove the existence of polluting activities and damage to property and health, then the defendant should take the responsibility to disapprove the causal relationship between the pollution and damage. In this case, it would require more information about actual incinerator emissions – that is why disclosure and continuous monitoring is so important.

Legal reform

Situations like the ones described in this case study will never be resolved without a newly revitalized set of institutions that can impartially address these types of pollution and subsequent harms. This case, like many others, illustrates the urgent need for effective legal reform that creates truly impartial administrative and legal institutions to regulate pollution.

Media reports

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http://www.china.org.cn/environment/2010-01/13/content_19225974.htm

<http://www.theguardian.com/environment/2009/nov/23/china-protest-incinerator-guangzhou>

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<http://www.reuters.com/article/2009/11/23/us-china-environment-incinerator-idUSTRE5AM0JS20091123>

http://www.newsgd.com/news/GDNews/content/2010-01/13/content_8081998.htm

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<http://www.utsandiego.com/news/2010/jan/24/villagers-protest-chinese-incinerator/>

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Annex 1. Stockholm Convention obligations for unintentionally produced persistent organic pollutants (POPs)

The Stockholm Convention is the first global legally binding instrument that seeks to protect human health and the environment by reducing and eliminating harmful chemicals. China ratified the treaty in 2004 and a total of 179 governments are now Parties and legally bound to implement it. The treaty acknowledges that, “...*precaution underlies the concerns of all Parties and is embedded within this Convention.*”⁵⁷

Annex C of the Stockholm Convention lists five unintentionally produced POPs that Parties to the treaty (including China) must control: dioxins, furans, PCBs, hexachlorobenzene (HCB), and pentachlorobenzene. The Convention’s goal for these substances is their continuing minimization and, where feasible, ultimate elimination.⁵⁸ Parties to the Convention are obliged to develop an action plan to advance toward this goal, and they are obliged to implement the plan.⁵⁹ As part of the plan, each Party should develop and maintain a national inventory of sources of unintentionally produced POPs together with an estimate of releases. Parties should evaluate the effectiveness of national laws and policies that contribute to managing these releases and develop strategies aimed at minimizing these releases. Every five years they should review the success of these strategies in meeting Convention obligations and report the results of this review to the COP.⁶⁰

The Convention lists certain source categories (in Part II of Annex C) that have the potential for comparatively high formation and release of unintentionally produced POPs to the environment. These are:

- Waste incinerators for municipal, hazardous and medical waste and sewage sludge;
- Cement kilns firing hazardous waste;
- Production of pulp that uses chlorine bleach; and
- Certain thermal processes in the metallurgical industry - secondary copper production, sinter plants in iron and steel manufacture, secondary aluminum production and secondary zinc production.⁶¹

Several elements of the treaty are highly relevant to decisions regarding construction and operation of waste incinerators. Parties are obliged to promote measures that will reduce the releases of unintentional POPs or eliminate their sources.⁶² Parties are also obliged to promote the development of substitute or modified materials, products and processes to prevent the formation and release of unintentionally produced POPs.⁶³ Parties are obliged to promote the use of best available techniques (BAT) and best environmental practices (BEP) to control the unintentional POPs sources identified in its inventory, and Parties are obliged to require the use of BAT to control certain sources.⁶⁴

Starting four years after the Convention enters into force for a Party, each Party has the obligation to require the use of BAT for any newly constructed or substantially modified facility that falls into any of the above listed source categories.⁶⁵ For China, this deadline passed in August 2008; however, no publically available definition of BAT is yet available.

Parties are given flexibility in defining how BAT will be nationally applied. However, each Party has a formal obligation to define BAT in some way, and it must do so taking into account the guidance provided by the Convention and by the adopted Guidelines. Based on a Party's own definition of BAT, it must promote the use of BAT standards for all dioxin sources listed in its national inventory, and it must require the use of BAT for new facilities in the source categories listed in Part II of Annex C (as described above).

The Convention's BAT/BEP Guidelines contain several important elements with high relevance to practical considerations for reducing and eliminating POPs – including from incinerators.⁶⁶ These include serious efforts to avoid construction of incinerators by giving priority to alternatives.

“When considering proposals to construct new waste incinerators, priority consideration should be given to alternatives such as activities to minimize the generation of waste, including resource recovery, reuse, recycling, waste separation and promoting products that generate less waste. Priority consideration should also be given to approaches that prevent the formation and release of persistent organic pollutants.”⁶⁷

The BAT/BEP Guidelines also clearly state a process that decision-makers should follow when deciding on building and operating incinerators and, *“should undertake a comparison of the proposed process, the available alternatives and the applicable legislation using what might be termed a “checklist approach”, keeping in mind the overall sustainable development context and taking fully into account environmental, health, safety and socio-economic factors.”⁶⁸*

The Convention recommends the following elements of the approach: reviewing the proposed new facility in the context of sustainable development; identifying possible and available alternatives; undertaking a comparative evaluation of both the proposed and identified possible and available alternatives; and priority considerations which include avoiding formation and release of unintentional POPs.

The treaty notes that when a proposed incinerator is compared with an alternative, *“Health, safety and environmental impacts of proposed alternatives should be compared with the corresponding impacts of the originally proposed facility.”⁶⁹*

The Convention's overall guiding principles in reducing and eliminating unintentionally produced POPs include important elements that are often overlooked when making decisions about construction and operation of incinerators⁷⁰:

- Precaution: *“Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”*
- Pollution prevention: *“The use of processes, practices, materials, products or energy that avoid or minimize the creation of pollutants and waste, and reduce overall risk to human health or the environment.”*
- Internalization of costs: *“...the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.”*

- Community right to know: *“...improved access to information and public participation in decision-making enhance the quality and the implementation of decisions, contribute to public awareness of environmental issues, give the public the opportunity to express its concerns and enable public authorities to take due account of such concerns.”*

Annex 2. Stockholm Convention obligations for wastes

The Stockholm Convention is the first global legally binding instrument that seeks to protect human health and the environment by reducing and eliminating harmful chemicals. China ratified the treaty in 2004 and a total of 179 governments are now Parties and legally bound to implement it. The treaty acknowledges that, “...*precaution underlies the concerns of all Parties and is embedded within this Convention.*”⁷¹

For all POPs listed by the Convention, Parties are required to develop and implement strategies to identify existing POPs stockpiles, and to develop strategies for identifying products in use that contain or are contaminated with POPs and POPs-containing wastes.⁷² POPs stockpiles must be managed in a safe, efficient and environmentally sound manner.

Parties are required to take measures so that POPs-containing wastes, including products upon becoming wastes, are handled, collected, transported and stored in an environmentally sound manner.⁷³ POPs-containing wastes must be disposed of in such a way that the POPs content of the waste is destroyed or irreversibly transformed and no longer exhibits POPs characteristics. However, other means of environmentally sound disposal are permitted if the destruction and irreversible transformation of the POPs-containing waste is not the environmentally preferred option; or if the POPs content of the waste is low.⁷⁴ Disposal operations that would allow for the potential recovery, recycling, reclamation or reuse of the POPs content of the waste are strictly prohibited.⁷⁵ Export of POPs-containing wastes is allowed only for the purpose of environmentally sound disposal as specified above.⁷⁶

The Stockholm Convention BAT/BEP Guidelines provide highly relevant considerations on waste management. The Guidelines note that, “*Burning of waste has the potential for comparatively high unintentional formation and release of persistent organic pollutants to the environment. Waste incinerators are therefore listed as Part II source categories in Annex C of the Stockholm Convention.*”⁷⁷

The BAT/BEP Guidelines include important principles of waste management that governments should implement. These include, “*the source reduction principle; the integrated life cycle principle; and the principle of recovery of reusable and recyclable components, to the greatest possible extent.*”⁷⁸ The Convention recommends “...*separating at the source those wastes that can be composted, reused or recycled.*”⁷⁹ The treaty also notes that the composition of the waste should be taken into account when seeking waste management solutions.

Governments should prioritize waste reduction before incinerator construction, in part to avoid the loss of resources and also to protect human health. “...*a society should give careful consideration to the full range of waste management options and considerations before reaching a decision to make a large-scale investment in the construction of any new incinerator, a new sanitary landfill, mechanical or biological treatment, or other similar investments, or to retrofit an existing facility for these purposes.*”⁸⁰ In China, where the percentage of wet food waste is particularly high, the Guidelines state that, “*If the mixed waste contains a large percentage of vegetable waste, the possibilities for composting or anaerobic digestion should be examined.*”⁸¹

The Convention Guidelines also describe how incinerators can undermine waste reduction efforts. *“...the decision to construct a new large-scale waste treatment facility can undermine efforts at waste reduction and waste-derived resource recovery. Those who invest in these new facilities will often face pressures to assure sufficient incoming waste in order to recover their investments. When this happens, the new facility can sometimes serve as a counterforce and as a disincentive to effective waste reduction efforts.”*⁸²

Finally, the Conventions’ BAT/BEP Guidelines note the importance of source reduction. *“The first priority among waste management options is source reduction – minimization of the quantity of waste, alongside the reduction of its toxicity and other hazard characteristics. This is a responsibility shared by all sectors of society. One measure of success is the percentage of discards that can be diverted from landfills and incinerators, but this should always be considered in the context of total waste generated.”*⁸³

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

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