

Position Statement

HK People Oppose Plans for Shek Kwu Chau Mega-Incinerator

Hong Kong people from a range of groups and places across the territory are strongly opposed to the Hong Kong government's plans to build a waste incinerator on an artificial island beside Shek Kwu Chau.

This massive project has huge implications for Hong Kong – and yet most people know very little about it. Even before the project's environmental impact assessment process was concluded, the Environmental Protection Department jumped straight to preparing for dredging and reclamation beside Shek Kwu Chau, to build one of the world's biggest – and most expensive – incinerators.

Our opposition to the project is based on the following:

Hugely Expensive

1) In the shocking absence of any official cost estimates, we have sought and referred to estimates by construction industry experts, with figures for construction of the mega incinerator ranging from HK\$8 billion to at least HK\$13 billion. This would make it not only one of the world's largest incinerators, but also the most expensive – entailing shocking misuse of taxpayers' money;

Major Procedural Errors

2) We oppose the government aiming to gain permission for sea-bed dredging and reclamation without consideration of the overall project by the Legislative Council, and are concerned this will lead to "destroy first and develop later" behaviour, which may establish a very bad precedent for the government and society;

3) The EPD commissioned an environmental impact assessment regarding a site for one incinerator; yet as this proceeded, made it plain that two incinerators would be required;

4) The EPD has used an absurd and defective site-selection process, which appears motivated by politics rather than by commonsense, and ignores the health impacts on and wishes of nearby residents;

No Solution to Waste Problem

5) Municipal waste incinerators cannot resolve Hong Kong's solid waste problems. In the absence of a holistic approach to waste management, they will

instead lead to a need for even more incinerators;

6) The government is rushing to set up incineration, and is currently refusing to consider alternatives, including a multi-faceted approach that includes modern technologies such as anaerobic digestion – particularly to help solve issues with food waste; a far less costly project proposed by Green Island Cement Company; greatly enhanced reuse and recycling and – of paramount importance – reduction of waste produced in Hong Kong, one of the world’s most wasteful societies;

7) EPD calls the incinerator an “Integrated Waste Management Facility”, yet this seems just a fancy title for a big fire that will burn unsorted waste;

8) The mega-incinerator will produce at least 300 tonnes of toxic ash per day, which must be specially handled and disposed of in a landfill;

Will Have Major Environmental Impacts

9) Though waste fed into the incinerators will be essentially unsorted, EPD plays down the potential for emission of large quantities of pollutants including toxic gases such as dioxins and other organic chemicals, heavy metals, and respirable suspended particulates. The EIA has scant information on air quality calculations, which appear based on best-case scenarios;

10) Dredging and reclamation will kill Indo-Pacific Finless Porpoises, a species globally Vulnerable to extinction, and affect the unique biodiversity of Shek Kwu Chau;

11) Dredging and reclamation will also damage one of best remaining areas for Hong Kong fisheries, dealing a severe blow to the livelihood of fishermen;

12) The mega incinerator will be an industrial site with a 150-metre high chimney (almost as tall as 180-metre HSBC Main Building), creating a monstrosity in an Area of Outstanding Natural Beauty, which the government in 1995 designated for leisure tourism and conservation;

Will Have Negative Social Consequences

13) Rather than proving a tourist draw as the EPD claims, the mega incinerator will deal a heavy blow to local tourism (especially Cheung Chau and South Lantau);

14) The emphasis on mega incinerators will reduce potential for creating jobs in, for example, waste sorting, recycling and reuse;

Bogus Claims Regarding Certain Environmental “Benefits”

15) Claims the mega incinerator will be a good way of generating power or reduce greenhouse gas emissions are devoid of merit, based only on assumptions that it is not otherwise possible to reduce waste, enhance recycling and reuse, and employ other techniques such as anaerobic digestion.

The Alternative: Comprehensive Waste Management

It is indeed difficult to solve Hong Kong's problem with domestic waste; however, there is a broad alternative to the Shek Kwu Chau Mega-incinerator: *employ a diverse mix of approaches*, rather than focusing such vast resources on a single option that is essentially just a very expensive bonfire with added technologies.

The EPD is indeed working on some other approaches, which is commendable. However, compared to the mega-incinerator, these receive only minor attention.

Among possibilities:

Reduce waste in Hong Kong.

16) This is of course paramount. It has been part of government planning, yet the government has failed to achieve the EPD's 1998 or 2005 targets for waste reduction. This is reprehensible; clearly, drastic changes are needed – and must be far more wide-ranging and effective than, say, the plastic bag levy. They require imagination, forward thinking, and will and drive to succeed, together with support from Hong Kong people;

More Action at District Level

17) More waste treatment at district level. Instead of massive schemes in a very few places, more waste should be treated within districts;

Deal with Food Waste

18) Food waste is a major issue. Rather than simply burn waste food, there is potential for treating it in anaerobic digesters, producing potentially useful compost, as well as methane that can be a localised energy source. Digesters are especially well suited to Hong Kong, as they operate best at warm temperatures;

Increase Recycling and Reuse

19) Though EPD reports high percentage of waste recycling, the recycling rate should be increased, such as by expanding to cover glass;

20) Reuse is important and requires encouraging – it should not be the case that having deposits on glass bottles, say, has become part of history;

Consider Alternatives to the Mega Incinerators

21) For instance, there is a proposal for a far less costly form of incineration on an already industrial site, and there are emerging technologies such as plasma arc waste disposal. Such techniques may also prove somewhat controversial – indeed, some groups below are vehemently opposed to

waste incineration – yet would prove less environmentally destructive than the proposed Shek Kwu Chau Mega-Incinerator, and would not devour so many resources that could be used for other means of waste reduction and treatment.

Participating groups:

Association for Tai O Environment and Development
The Conservation Agency
Friends of the Earth (HK)
Friends of Sai Kung
Green Lantau Association
Green Peng Chau Association
Green Sense
Greenpeace Hong Kong
Hong Kong Dolphinwatch
Hong Kong Outdoors
Living Islands Movement
Living Lamma
Living Seas Hong Kong
Lung Fu Shan Environmental Concern Group
Momentum 107
Range Education Centre Environment Concern Group
Tuen Mun Infrastructure Civic Monitor
Legislative Councillors Lee Cheuk-yan, Leung Yiu-chung
People from many districts, including Cheung Chau fishermen

Contact Person:

Eddie Tse, Tuen Mun Infrastructure Civic Monitor

Tel: email: tmicm2010@gmail.com

Crazy Shek Kwu Chau “Bonfire” Plans

If you're on Cheung Chau, look west across the harbour, and you'll see a small island: Shek Kwu Chau. It appears deserted, but hosts a drug rehabilitation centre.

Wildlife surveys led by US biologist Dr James Lazell, director of the Conservation Agency, have discovered reptiles including two snakes – Hollinrake's Racer and a sub-species of Jade Vine Snake – that are unique to the island, along with Bogadek's legless lizard, which is known from only three Hong Kong islands. This is one of perhaps eight nesting sites for white-bellied sea-eagle in Hong Kong. Waters along the west coast are key haunts of Hong Kong's small population of Indo-Pacific finless porpoise, which the International Union for the Conservation of Nature classes as Vulnerable to global extinction.

With the Soko Islands further west, and the beautiful south coast of Lantau to the north, it's not surprising that in 2001 a government development strategy for the southwest New Territories included a plan to “protect and conserve the relatively unspoilt marine environment while providing recreational and educational opportunities to the public in these areas”.

Yet there was a surprise last year, when the government determined that Shek Kwu Chau was the preferred location for building one of the world's largest waste incinerators, burning 3000 tonnes of waste per day. Plans call for this to be on an artificial island, constructed just off the southwest coast of Shek Kwu Cha, in prime porpoise habitat. It will be an industrial site with a 150-metre chimney – almost as tall as the HSBC Bank Building.

The incinerator plans have met widespread opposition for a host of reasons, including the damage to wildlife and fisheries, severe impact on scenery in a beautiful area, and massive financial cost. Seventeen groups including Friends of the Earth, Greenpeace Hong Kong, Green Sense and the Living Islands Movement have signed a joint statement outlining their concerns. Plus, incinerator technology is dated, likely threatening public health – and there are cheaper, cleaner, more sophisticated ways to deal with Hong Kong's waste than simply setting fire to it.

Incineration Dates from the Stone Age

Incineration – using fire as a means of waste disposal – dates back to the Stone Age. The first waste incinerators were built in the late 19th century.

From the late 1960s, Hong Kong turned to incineration to reduce the volume of waste sent to landfills. Four waste incineration plants were built, but in 1989 a government white paper on pollution noted, “Incinerators are a major source of pollution in the urban areas. They account for approximately 18% of all respirable particulates emitted into the atmosphere of the territory and can be a source also of trace quantities of highly toxic substances.” The incinerators were phased out, with the last of them – at Kwai Chung – ceasing operation in 1997.

Incinerator technologies have since improved, such as through greatly reducing emissions of dioxins which, according to the World Health Organization, “are highly toxic and can cause reproductive and developmental problems, damage the immune system, interfere with hormones and also cause cancer”. In 2005, the Hong Kong government published a strategy for dealing with waste,

with plans including use of “state-of-the-art technology to treat unavoidable waste in a cost-effective, yet environmentally sustainable, manner”. Conveniently forgetting the 1989 white paper, this announced the core technology would be incineration.

According to the strategy, Hong Kong would first introduce charging for waste disposal; and before waste was sent to the incinerator it would be sorted, so would not include food waste or recyclable materials. Plus, there would be “stringent emission standards that command public confidence”.

It seems the government has since proven even more forgetful. Waste charging remains just an idea, we have little waste separation, and the incinerator will burn predominantly unsorted waste. Though the government makes much of the incinerator using a moving grate for better burning, plus temperatures of around 850C to safeguard against dioxins, there is strong public concern instead of confidence concerning the likely emissions.

Potential Health Hazard

Even the incinerator’s planned design seems cause for concern – as it’s 150 metre chimney will be the same height as the chimney of the dirty and demolished Kwai Chung Incinerator Plant. Burning unsorted waste will increase the risks of emissions including toxins such as heavy metals and dioxins. Though the Environmental Protection Department claims there will be low levels of toxins, it also highlights the fact that Shek Kwu Chau is in southwest Hong Kong, so prevailing northeasterly winds will often blow away from the territory.

As so often with air pollution, it can be hard to be certain about health impacts of waste incinerators. The British Society for Ecological Medicine has produced one of the best reports on the issue, outlining a host of potential and likely problems, and noting, “probably the most dangerous pollutant of all is the PM2.5 particulate ... it is not possible to build a major source of PM2.5 particulates, such as an incinerator, without lives being lost... The majority of studies around incinerators have shown excesses of cancers.”

In the UK, a major study will soon begin assessing evidence suggesting there are significantly higher rates of infant mortalities in areas downwind of incinerators. Other apparent health effects include high rates of asthma around the world’s largest waste incinerator, in Detroit, US.

“In 2006 we assumed that any incineration technology adopted in Hong Kong would be state-of-the-art and ensure that pollutant emissions were minimized to the greatest possible extent,” comments one of Hong Kong’s staunchest campaigners for cleaner air, Professor Anthony Hedley, former Chair Professor of Community Medicine at the University of Hong Kong. “This now appears not to be the case and is unacceptable from a public health viewpoint. This is especially so, given that the EPD is apparently defaulting to depending on air movement to mitigate the impact of emissions locally and will only monitor mass concentrations four times a year.”

It is not only the emissions that are cause for concern. Pollutants that don’t escape as gases will be trapped in the chimney, forming fly ash so toxic that in many jurisdictions it is treated as hazardous waste. According to the British Society for Ecological Medicine, fly ash contains over 98% of dioxins produced

by an incinerator together with heavy metals, “making it some of the most toxic material on the planet”.

Plans call for the fly ash plus ash from below the flames to be dumped in the West New Territories Landfill, north of Tuen Mun. Yet there are suspicions that the government’s recently announced plan for a possible artificial island south of Cheung Chau is at least partly to create a more suitable site for dumping the ash. No matter where the ash is headed for, it will be hard to prevent it being blown by the wind, and surely impossible to prevent the toxins escaping into coastal waters over time.

Alternative Technologies: Tried and Tested, and World-changing

Even in 2005, moving grate incineration was far from “state-of-the-art technology”; it was based on techniques first developed in the 1920s. Today, it seems even more primitive – and there are cleaner, cheaper, more sophisticated ways of treating waste.

One way that’s tried and tested is called anaerobic digestion. This involves using micro-organisms to break down organic matter such as food waste – creating methane that can be burnt to produce energy, along with compost. But partly as Hong Kong has little need for compost, its development is rudimentary here.

Another way is truly “state-of-the-art”, and is based on using extremely hot plasma to blast molecules apart, resulting in relatively simple gas mixtures and glassy solids. In 2009, *Scientific American* described plasma gasification as “lighting in a bottle”, and featured it among “20 Ways to Build a Cleaner, Healthier, Smarter World”.

The Environmental Protection Department seems determined that plasma gasification will not build a cleaner Hong Kong. Deputy director Elvis Au says they have contacted a few technology suppliers, which indicated they cannot meet Hong Kong’s needs.

This assertion conflicts with information from two suppliers. Brian Miloski, Chief Financial Officer of US company Solena, has submitted a proposal to build plasma arc facilities that would treat all Hong Kong waste, using heat to generate electricity, and combining components of the resulting gas to create jet fuel – which could be bought by Cathay Pacific. Though creation of jet fuel from domestic waste seems futuristic, Solena is already working on plans for similar plans together with British Airways, Qantas, SAS, and a consortium of American Airlines. Asked if the process can treat 3000 tonnes of waste per day, Miloski replied, “There is no theoretical limit. The gasification chambers are simple modular and you add on as many as you need.” He advises building the facilities at the three landfills.

UK based Advanced Plasma Power adopts a similarly modular approach to waste treatment. After successful trials with a demonstration plant, they are developing projects including a joint venture to mine over 16 million tonnes of waste from a Belgian landfill, extracting recyclable material such as metal and using gasification to create energy. According to an email to me from Les Liddiard, vice president of sister company Tetronics, Advanced Plasma Power can treat Hong Kong waste, using a combination of modular approach and

regional facilities. Just as with Solena, there's no need to build the gasification plants beside a remote island

The EPD's consultant for the incinerator project, Aecom, considers that, "scaling up the plasma gasification technology for adoption in the present IWMMF [Integrated Waste Management Facility] project would be very risky and hence not advisable." And yet ... in the US, Aecom is involved in a project to gasify about 1200 tons of waste per day, and announced, "We believe that this technology is not only environmentally friendly but ready for large-scale commercialization."

Contradictions, Questions and Politics

Why such contradictory statements by Aecom in Hong Kong and the US? Well, you might want to consider this: in 2009, Aecom advised that Hong Kong should use incineration; Aecom then conducted the environmental impact assessment to select the site for the incinerator; and in November last year – a month before the environmental impact assessment process was complete – Aecom proudly announced it had been awarded a consultancy contract for developing the incinerator.

There are more contradictions, more questions, regarding the mega incinerator plans. For instance, why has the government dismissed an alternative incineration proposal by Green Island Cement, even though it has conducted a successful pilot project? What are the real reasons Shek Kwu Chau is considered a suitable site for a mega incinerator, especially as the alternative – at Tsang Tsui, near Tuen Mun, is lagoons with power plant ash, of minimal environmental value? Why has no official construction cost been given, and are unofficial estimates of HK\$13 billion accurate?

The government claims the incinerator will be attractive, and clean. I once asked Elvis Au: "So why not build it beside Tamar, so government officials can enjoy looking at it?" He replied that the emissions would make the area's air quality worse than permitted by the Air Quality Objectives. Aha, so this means the incinerator is ok for Shek Kwu Chau, but too dirty for the city.

Now, the key question to ask is surely: Is this time to reconsider our direction, assess possibilities, and find better options, so Hong Kong shows the way forward for waste treatment, not the way backward?

World Cities and Waste

Singapore

Touted as a role model for Hong Kong, with four waste incinerators, and ash sent to a landfill "island" that will be full by 2040.

Toronto, Canada

Strong emphasis on separation of waste, with suitable materials processed by anaerobic digestion. Producing biogas, and aims to use this to power waste trucks.

Manchester, UK

Aiming to become a "world-class city" in terms of waste treatment, building five centres for separation and biological treatment of waste.

Tees Valley, UK

About to build a plasma gasification facility to treat 950 tonnes of waste per day.

San Francisco, US

Adopting a “zero waste” strategy, in which nothing would go to landfills or be incinerated. Currently recovers 77 percent of the materials it discards, with goal of zero waste by 2020.

Hong Kong, Asia’s World City

Plans to build mega-incinerator in beautiful area earmarked for conservation and leisure tourism. Nine recycling centres – around one per 800,000 people, with waste separation and recycling partly reliant on non-governmental organizations, and elderly ladies digging cans from waste bins and collecting newspapers at subway stations.

Dr Martin Williams

I have a PhD in Physical Chemistry from Cambridge University, UK; obtained this through conducting experiments in which used a strong electrical discharge to blast apart water molecules, and followed reactions with a laser. Lived in Hong Kong since 1987, working mainly as freelance writer and photographer specialising in wildlife and conservation issues, as well as environmental consultant, including for World Bank and the Asian Development Bank.