International POPs Elimination Project

Fostering Active and Efficient Civil Society Participation in Preparation for Implementation of the Stockholm Convention

Consumer Report on the Broga Incinerator Project – A Contribution to the Public Debate on the Use of Incineration for Managing Municipal Discards in Malaysia

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About the International POPs Elimination Project

On May 1, 2004, the International POPs Elimination Network (IPEN http://www.ipen.org) began a global NGO project called the International POPs Elimination Project (IPEP) in partnership with the United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Program (UNEP). The Global Environment Facility (GEF) provided core funding for the project.

IPEP has three principal objectives:

- Encourage and enable NGOs in 40 developing and transitional countries to engage in activities that provide concrete and immediate contributions to country efforts in preparing for the implementation of the Stockholm Convention;

- Enhance the skills and knowledge of NGOs to help build their capacity as effective stakeholders in the Convention implementation process;

- Help establish regional and national NGO coordination and capacity in all regions of the world in support of longer term efforts to achieve chemical safety.

IPEP will support preparation of reports on country situation, hotspots, policy briefs, and regional activities. Three principal types of activities will be supported by IPEP: participation in the National Implementation Plan, training and awareness workshops, and public information and awareness campaigns.

For more information, please see http://www.ipen.org

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Physical description of site

Type of site: Proposed thermal treatment plant (incinerator) for solid waste management with designed capacity to treat 1,500 tonnes of municipal solid wastes per day. The proposed location is at Beroga, Mukim Semenyih, Daerah Hulu Langat, Selangor Darul Ehsan.

Geographical location: The proposed site is on State land adjacent to the Sungai Lalang Forest Reserve, in Mukim Semenyih, Hulu Langat District, State of Selangor, Malaysia. Actual coordinates of the proposed site as reported in the Environmental Impact Assessment Report is as follows:

Point	Latitude / North	Longitude / East	Description
1	2° 57” 59’	101° 53” 91’	Northwest
2	2° 57” 51’	101° 53” 94’	Southwest
3	2° 57” 64’	101° 54” 06’	Northeast
4	2° 57” 56’	101° 53” 09’	Southeast

Size of area: The total area that is required for the plant is approximately 19.0 hectares (46.95 acres). The proposed incinerator plant will be built on an elevated platform of about 175 meters above sea level and will occupy a footprint area of 5.1 hectares, while an additional 13.9 hectares is required to allow for cut and fill in the preparation of the required footprint and for slope stabilization. A further 23 hectares is estimated to be required for the construction of the permanent access road, detention pond and allowance for working space during the construction period.

Nature of land: The site lies essentially at the foothills of the Main Range of Peninsular Malaysia. The proposed plant is characterized by logged over forest on generally hilly terrain with elevations ranging between 120m to 260m above mean sea level. The site is surrounded by hills to the north and the east with the nearest peaks about 1km away either way topping at about 469m to the north and at about 540m to the east. Saringgit Hill at 223m lies to the southwest about 0.5km from the site.

Overall the project site mostly has undulating to very steep terrain. Slopes which are less than 25° make up about 49.4% of the total area. A large portion of the area comprises slopes between 25° to 35° with a total area of 7.27 hectares or 41.10% of the total area. Flat to undulating terrain (between 0° to 20° slopes) make up about 5.17 hectares or 29.2% of the total project area.

Hydrology: The proposed plant is located within the Saringgit River catchment, one of the major tributaries within the Semenyih River catchment. The area is drained by the Saringgit River which is located at the southern boundary of the site draining west to the Semenyih River. The river has a width of between 3m to 10m and is joined by one of its tributary, the Tekali River. Rinching River is the other river that is found close to the south of the Saringgit River.

Saringgit River which has a catchment area of about 6.7 km^2 (inclusive of its tributary Tekali River) will be the receiving stream for any runoff and discharges that are generated from the proposed incinerator plant. The river flows along the southern boundary of the project site and drains due southwest towards he Semenyih River where it confluences at Baharu Village in Semenyih Town. Water from the river is presently used by fish farmers for pond aquaculture.

Water supply: An existing public water supply intake is located downstream of the project site along Semenyih River in the vicinity of Jenderam Village. The average water withdrawal is approximately 650 million litres per day. The distance of this water intake point from the project site is approximately 26km.

Surrounding communities: Located within the 5km radius is 12 existing settlements, of which nine are rural villages, two are Chinese new villages (Kampung Baru Beroga and Kampung Baru Tarun) and one is a planned housing estate (Taman Tasik Semenyih). Taman Tasik Semenyih is a completed housing estate with nearly 73 hectares completed and inhabited. The existing settlements make up about 5% (396ha) of the total land area. These settlements support about 1,000 households or nearly 5,000 persons. The nearest settlement to the project site is Taman Tasik Semenyih which is 1.99km away.

In addition to the existing settlements, there are also housing estates that are on various stages of development. They are Bandar Rinching, Taman Pelangi Semenyih and Bandar Tasik Kesuma. Collectively the land area designated for housing, existing and committed, within the 5km radius covers at least 16% of the area.

The total area within the 5-10km radius from the project site covers about 23,445ha, of which more than 75% still remain under agriculture and forest and another 15% under residential use.

Surrounding wildlife: A total of 229 animal species were identified during a survey at the project site and the adjacent forest reserve for preparation of the EIA report of the proposed project. There were 43 species of amphibians and reptiles, 75 species of mammals and 111 species of birds. Three species of reptiles i.e. common water monitor lizard, king cobra and the common cobra found here are “protected” under the Protection of Wildlife Act 1972 (Act 76) 1994. Among the mammals found in the surrounding area which are “totally protected” or “protected” are flying lemur, slow loris, gibbon, pangolin, black giant squirrel, flying squirrel, porcupine, bamboo rat.

Among the 111 species of birds identified, 104 species are “totally protected”, six are “protected” and one had an unidentified status.

Surrounding plant life: The forest type at the site was formerly Lowland Dipterocarp Forest which has been heavily logged. Tree species of the secondary forest, *Artocarpus elasticus* and *Croton argyatus* dominate the site. The forest floor is dominated by ferns and ginger. Colonies of Bertam palm and wild banana prevent regeneration of many of the tree species. The Sungai Lalang Forest Reserve at the eastern boundary of the proposed project site had also been logged from the riparian zone next to Saringgit River to the ridge top Hill Dipterocarp Forest. As there was less extensive clearing, there are still many primary forest species but not of commercial importance. The diversity of plants at the forest reserve is higher than at the proposed project site.

History of site

The proposed development site is located on state land that lies at the periphery of the Sungai Lalang Forest Reserve. The area is generally covered by logged over forest and abandoned old rubber trees. A large tract of land at the north-western section of the state land and stretching to the edge of the Sungai Lalang Forest had been cleared and planted with bananas.

Approximately 7,835.76 hectares of land are located within the 5km radius of the project site. Land use range from forest to agriculture, housing, sand mining and quarrying, institution and industry. The major land uses are agriculture and forest, both of which constitute at least 75% of the land area.

The Selangor State Structure Plan and the Draft Local Plan for Bangi-Semenyih-Beranang has designated this area as an environmentally sensitive area and limited activities in this area for forestry, recreation, agriculture only. According to the existing Land Use Zoning Map and other land use regulatory documents used by the Kajang Municipal Council, the state land is zoned for agriculture use. There is no mention of utilizing the site for waste treatment and disposal.

Chemical characterization

Municipal solid waste incinerators are typically fed a mixed waste stream and the combustion of such waste leads to hazardous substances originally present within the waste being mobilized into releases from the incineration plant. Whatever control technology is applied, all types of incineration result in releases of toxic substances in ashes and in the form of gases/particulate matter to air. These substances include heavy metals, numerous organic compounds, such as dioxins, furans, and gases, such as nitrogen oxides, sulphur oxides, hydrogen chloride, hydrogen fluoride, together with carbon dioxide.
Thus, during incineration, polychlorinated dibenzo-p-dioxins (dioxins) and dibenzofurans (furans), hexachlorobenzene (HCB) and polychlorinated biphenyls (PCB) may be unintentionally formed and released. Pollutants that are emitted into the atmosphere from an incinerator stack, as well as fugitive emissions, may be deposited on the ground near to the incinerator and so contaminate the local environment. These pollutants including dioxins and PCBs may also be transported great distances on air currents.

Studies show that soil and vegetation close to incinerators may become contaminated with incinerator releases of dioxins and heavy metals to levels above normal background concentrations. As a consequence, there is a possibility of agricultural produce, such as crops, becoming contaminated. Livestock may also take in pollutants, largely through ingestion of contaminated vegetation and soil. In some instances this has led to cow's milk being banned from sale due to unacceptably high levels of dioxins, and recommendations to avoid the consumption of eggs and poultry.

All types of incinerators produce dioxin. Dioxin causes health problems including cancer, altered sexual development, reproductive problems, suppression of immune system, diabetes and hormonal effects. The predominant formation pathway of dioxins has been reported to be de novo synthesis (Johnke and Stelzner 1992), and they are also formed from precursors that are either constituents of the waste or are also formed by chemical recombination of materials in the waste. PVC, a common constituent in municipal waste, has also been identified as a dioxin precursor (USEPA 1997).

PCBs are known to be formed in incinerators (Blumenstock *et al.* 2000, Wikstrom *et al.* 1998, Sakai *et al.* 1996, Fangmark *et al.* 1994) and are present in stack gases released to the atmosphere (Miyata *et al*. 1994, Wilken *et al.* 1993, Magagni *et al.* 1991). A study on MSW incinerators in Japan in 1992 found that emissions of the highly toxicologically significant coplanar PCBs varied considerably between different incinerators (Miyata *et al.* 1994). The study concluded that waste incinerators were a source of PCB contamination in humans, food and environment.

Chlorinated Benzenes are formed in incinerators (Blumenstock *et al.* 2000, Wikstrom *et al.* 1998, Fangmark *et al.* 1994) as are the chlorinated phenols (Wikstrom *et al.*1999). It has been shown that these chemicals are released in stack gases (Wilken *et al.* 1993). The production of hexachlorobenzene (HCB), the fully substituted form of benzene is of particular significance. Recent research indicates that HCB can contribute significantly to the dioxin-like toxicity caused by organochlorine chemicals in human milk (van Birgelen 1998). It is listed by the IARC as a Group 2B carcinogen, i.e. it is possibly carcinogenic to humans and also appears to be a tumour promoter.

Environmental, Socioeconomic, and Health Consequences

The proposed incinerator will be constructed in an environmentally-sensitive area despite objection and protest from concerned citizens. Ebara Corporation of Japan holds the contract to design and construct the gasification-type incinerator that is disturbingly on a pilot stage in Japan and in much smaller capacities.

Concerned community members and civil society groups are opposed to the plan because it employs unverified technology to be built by a controversy-ridden company. It contravenes laws and policies, and imperils the society with enormous environmental, health, safety and financial costs.
The overriding objection to the proposed incinerator plant at Broga is the public health threat it poses. The cumulative risk of all cancers in Peninsular Malaysia is reported to be 18%. This means that 1 in 5.5 or approximately 1 in 6 Peninsular Malaysians can be expected to get cancer in their lifetime. The communities surrounding the proposed incinerator are concerned that they will be at higher risk of getting cancer as the proposed incinerator would be emitting carcinogenic and persistent pollutants.

The proposed incinerator would promote the formation of dioxins. The EIA report presents incorrect information about which factors most greatly influence the quantity of dioxins an incinerator would emit. The EIA report states: "Combustion controls are one of the principal controls to reduce dioxin and furan emissions." This is not so. The quantity of dioxins incinerators emit depends more on the rate of dioxin reformation in flue gas exiting the combustion furnace than on the temperature of combustion. (U.S. EPA 2000)

That is, burning waste at high temperatures will still release substantial quantities of dioxins if precursors react and combine in flue gas downstream of the furnace. This is termed '*de novo*' synthesis of dioxins. According to an investigation by Littaru, P. & Vargui, L (2003):

"*Fly ash from municipal solid waste incinerators (MSWIs) has been characterized in terms of polychlorinated dibenzyl-p-dioxin and polychlorinated dibenzofuran (PCDD/F) content. Increasing values of PCDD/Fs have been found to correlate with decreasing temperatures of sampling points in flue gas treatment lines of the plants, confirming other researchers' findings about temperature as the major controlling parameter for the PCDD/F formation. Measured PCDD/F ratios show that de novo synthesis is the dominant formation mechanism."*

Thus, the principal factor influencing *de novo* synthesis of dioxins is how quickly flue gas exiting the combustion chamber cools. If flue gas cools slowly, *de novo* synthesis of dioxins is at its highest. The EIA report acknowledges this point whereby stating that "The following are practicable measures to reduce and control emissions of dioxins ... quick cooling of flue gas to minimize dioxin reformation between 200^{o}C to 400^{o}C."

De novo synthesis occurs to an especially great extent when flue gas cools slowly by passing through a waste heat boiler. According to the U.S. Environmental Protection Agency (U.S. EPA 1999):

"... *incinerators with waste heat recovery boilers present a unique situation for dioxin/furan control. Our data base shows that incinerators equipped with waste heat recovery boilers have significantly higher dioxin/furan emissions compared to other incinerators. In the waste heat recovery boiler, combustion gas is exposed to particles on boiler tubes within the temperature window of 450^{o}F to 650^{o}F, which promotes surface-catalyzed formation of dioxin/furan*."

The incinerator proponent proposes to slowly cool flue gas from the incinerator's combustion chamber by use of a waste heat boiler. This is precisely the kind of incinerator design that promotes high levels of dioxin emissions. It is simply impossible to achieve quick cooling of flue gas to minimize dioxin reformation when an incinerator is equipped with a waste heat boiler.

The air pollution control devices as stated in the EIA report would not effectively reduce emissions of dioxin and mercury. The proponent emphasizes the importance of using proper air pollution control technology for minimizing the release of toxic pollutants from the proposed incinerator. The EIA report states: "The major concerns about the environmental risks involved in thermal treatment of municipal solid waste are the potential release of contaminants to the surrounding atmosphere .... The thermal treatment plant is equipped with various pollution control systems based on advanced technology to control such emissions to the environment." This is inapt.

The air pollution control technology proposed would do little, if anything, to reduce emissions of dioxins and mercury from the proposed incinerator. The air pollution control technology proposed consists of:

1) two fabric filters for control of particulate emissions;
2) dry sorbent injection for control of acid gas emissions; and
3) a vanadium DeNOx catalyst for control of NOx emissions.

According to the U.S. EPA (1996): "*Fabric filter systems, typically dry sorbent injection followed by a fabric filter ... does not add to the control of [dioxins] and mercury*." This is due to the fact that dioxins and mercury are in a vaporous state when passing through the air pollution control technology. Thus, fabric filters, which collect particles, and dry sorbent injection, which convert acid gases into particles, allow unimpeded passage of dioxin and mercury vapor. A vanadium DeNOx catalyst will only decompose dioxin when the temperature of the flue gas is sufficiently hot.

According to a technical report of the Environmental Agency UK (2002):

"*For some time now catalytic destruction technologies have been applied to a number of incineration processes to destroy PCDD/F in the flue gases. Catalysts can be designed to perform the task of reducing NOx emissions at the same time as reducing levels of PCDD/F. A number of different designs have been used and a key feature is the operating temperature. Several designs require flue gas to be reheated for the catalyst to be effective and there is some suggestion that as well as being expensive and energy consuming this process can increase the levels of some pollutants entering the catalyst. In an experiment designed to assess their effectiveness at destroying compounds other than just PCDD/F a number of catalysts were tested in the laboratory in Japan ... Temperatures were selected between 150^{o} and 310^{o}C. ... The catalysts tested showed marked differences in performance at lower temperatures for some compounds. At low temperatures the catalyst was also found to have adsorbed certain compounds rather than destroying them (up to 60% in the case of a tri-chlorofuran at 150^{o}C). ... The authors indicate that the more highly chlorinated compounds are less likely to be destroyed at lower temperatures as the redox potential increases – this effect overcomes additional residence time due to lower volatility The results suggest that there is a risk that at lower operating temperatures highly chlorinated compounds would accumulate in the catalyst rendering it ineffective and being re-emitted at a later time. For effective destruction the authors suggest a minimum temperature of 250^{o}C is required. Again for PCDD/F control the authors note the need for temperatures in excess of 200^{o}C for effective destruction*."

The proponent proposes to operate the vanadium DeNOx catalyst at temperature of 180^{o}-200^{o}C. At this temperature, the vanadium DeNOx catalyst, which primarily serves to limit emissions of nitrogen oxides, would do little, if anything, to limit emissions of dioxins.

The project proponent improperly assumes that emissions of dioxins and other toxic pollutants will remain within the limits of applicable emission standards. To predict how the proposed incinerator might impact human health and the environment, the EIA consultants used a computer model to predict how the release of toxic air pollutants would affect air quality in the surrounding environment.
The validity of any computer for predicting how the release of toxic air pollutants from a proposed facility would affect air quality in the surrounding environment rests on accurate estimates of pollutant emission rates. The proponent assumes that the proposed incinerator would emit toxic pollutants at rates equivalent to its proposed emission standards. In particular, the proponent assumes that the proposed incinerator will emit dioxins at a rate of 0.1ng/m^3. This assumption is improper and contradicted by evidence of the rate of dioxin releases from municipal waste incinerators around the world.

According to U.S. EPA (1990) data, a fluidized bed, municipal waste incinerator using dry sorbent injection for air pollution control emits on average 63ng/m^3. This is 630 times higher than the assumption for dioxin releases from the proposed incinerator at Broga.

The United Nations advises that countries estimating releases of dioxins to assume that municipal waste incinerators emit between 5 to 50ng/m^3. According to the United Nations Environment Programme (2001):

"*The vast majority of all MSW incineration plants can be assumed to fall into classes 2 and 3. ... Class 2 assumes a reduction in the specific flue gas flow rate to 7,000 Nm^3/t MSW due to better combustion controls and lower excess air. The PCDD/PCDF concentration drops to 50 ng TEQ/Nm^3. Plants of this type may be equipped with an ESP, multi-cyclone and/or a simple scrubber. In class 3, the combustion efficiency improves further and the efficiency of the APC system improves (e.g. ESP and multiple scrubbers, spray-dryer and baghouse or similar combinations) resulting in a drop of the PCDD/PCDF concentration to about 5 ng TEQ/Nm^3*."

This is 50 to 500 times higher than the proponent's assumption for dioxin releases from the proposed incinerator at Broga.

The Environmental Health Impact Assessment (EHIA) in the EIA report of the proposed incinerator plant in Broga also does not adequately assess the potential health impacts of the proposed facility because it does not include the most important pathways of exposure. The EHIA addresses only direct exposure via inhalation even though it has been established for more than 25 years that, for such facilities, indirect exposures via pathways such as food ingestion are commonly far more significant.(U.S. EPA 1998)

For example, in assessing the potential impacts of pollutants released from the stack of a municipal waste incinerator, U.S. EPA scientists determined that indirect exposures contributed more than 95% of the total lifetime average daily dose (LADD) to the organic pollutants and from about 65% - 98% of the LADD for lead and 91% - 99.7 of the LADD for cadmium.

More specifically, the LADD for indirect exposures to dioxins were 30 - 7,600 times greater than those estimated for direct exposure via inhalation pathways; for PCBs, 300 - 7,000 times greater; for hexachlorobenzene, 80-2,800 times greater; and for benz(a)pyrene, 20-92 times greater. (Cleverly, D., *et al*. 1993) In other words, based on the findings of this USEPA study, total estimated dioxin exposures and associated cancer incidence due to the operation of the facility proposed for Broga are as much as 7,600 times greater than those presented in the EHIA.

In contrast to the findings of the USEPA study cited above and the 25-year history of health assessments for such waste treatment facilities, the authors of the EHIA effectively dismiss indirect exposures via food ingestion as too insignificant to be addressed in the EHIA.

The EIA report recognizes that water pollution may arise both during the development and operational phases of the proposed incinerator plant. The main contributor of water pollution during development comes from sediment transported to streams resulting from soil erosion and the disposal of sewage and sullage from construction camps and site office. Upon completion of construction and

commissioning of the plant, sewage from plant areas and wastewater stream such as wastewater from cooling water blow down, washing and seepage storage pit expected to be the main sources of water pollution.

As there is a water supply intake point for domestic use located downstream of the incinerator plant, the discharge of wastewater from the plant has to be controlled. Otherwise, there is fear of contamination of domestic water supply. It is highly inappropriate to locate a thermal treatment plant, which happens to be a polluting activity, in a water catchment area that caters for millions of consumers in the state. Further it is not acceptable to have water abstraction points downstream of an incinerator.

Workers in the proposed plant are also at risk of exposure to various chemical hazards and gas emissions from the incinerator plant. Municipal incinerator workers have considerable exposure to incinerator ash and this raises the possibility that they might absorb significant quantities of dioxins, and other toxic substances present in ash. Research has indicated that incinerator workers can be exposed to elevated levels of dioxins in workplace air.

Responsible party

Thermal treatment of municipal solid wastes has been identified as one of the waste management options within the integrated solid waste management plan that is proposed by the Government of Malaysia. The proposed incinerator project in Broga is put forth by the Department of Local Government, under the Ministry of Housing and Local Government of Malaysia. The government argues that incinerators are necessary to handle the rapidly increasing volume of solid waste in urban areas throughout the country.

Tokyo-based Ebara Corporation was awarded the contract to build the incinerator. The government appointed Consortium Ebara & Hartasuma Sdn Bhd to implement the project. Hartasuma Sdn Bhd is a Malaysian registered company.

The Government of Malaysia should not allow the installation of the proposed thermal treatment plant in Broga in view of Malaysia's commitment to the Stockholm Convention on POPs, given that Malaysia has signed the treaty.

As stated in Article 5, paragraph (c), of the Stockholm Convention, Parties are obligated to *"[p]romote the development and, where it deems appropriate, require the use of substitute or modified materials, products and processes to prevent the formation and release"* of unintentional POPs.

Annex C, Part V, Paragraph B, sub-paragraph (b) of the Convention offers the following statement*: "When considering proposals to construct new facilities or significantly modify existing facilities using processes that release chemicals listed in this Annex, priority consideration should be given to alternative processes, techniques or practices that have similar usefulness but which avoid the formation and release of such chemicals."*

In other words, to comply fully with the Stockholm Convention in considering the current proposal to construct a new facility that will form and release unintentional POPs, the Government of Malaysia should give priority consideration to alternative processes, techniques or practices that have similar usefulness but which avoid the formation and release of unintentional POPs.

If the current proposal to construct and operate a new facility at Broga that forms and releases POPs is carried out, the Government of Malaysia will be establishing a new large point source of unintentional POPs where no such source exists. This will result in an increase in total releases of unintentional POPs at Broga.

Plans for cleanup

On 22 November 2002, following public pressure, the Malaysian Cabinet announced the relocation of the incinerator project from Kampung Bohol, Puchong to Broga. Residents in Broga and the surrounding areas suddenly find themselves neighbours-to-be of the 1,500 tonne-capacity thermal treatment plant with a 20 years' shelf-life. They have opposed the incinerator project since then.

Following this announcement, an action committee was set up representing 25 residential areas in Semenyih, Broga, Rinching and surrounding areas protesting the project. The committee contacted several NGOs, among them the Consumers' Association of Penang (CAP) and requested assistance. CAP had been helping the residents by providing technical input regarding the incinerator technology, impacts of incineration, sourcing information and contacts for the committee to pursue this matter.

CAP had submitted comments on the Terms of Reference of the Detailed Environmental Impact Assessment (DEIA) of the proposed incinerator project and in October 2003, comments on the DEIA were submitted. We raised our objections and also based our argument on experiences overseas. Our counterparts in the Global Anti-Incinerator Alliance gave valuable inputs and comments. The DEIA report was finally approved by the Department of Environment and thus the project proponent could proceed with the project.

The residents' action committee carried out protest actions e.g. peaceful protests, made numerous police reports, sent letters of appeal to the Malaysian government to scrap the project, sent petitions to the relevant parties including the Japanese government, met government officials and the incinerator contractor to voice their concerns and applied pressure for the proposed project to be shelved.

The committee even offered to begin a pilot zero-waste project to lend credence to their conviction that an effective recycling campaign would significantly reduce household wastes that are contributing to the shrinking landfills and eliminate the need for the project. The residents with CAP's assistance brought in local and international experts to talk on impacts of incineration and move towards zero-waste.

CAP and the residents plan to meet the Prime Minister to put forward our argument against incineration and propose to the government to move towards sustainable waste management systems.

Recommendations of NGO

Constructing new incinerators in Malaysia is akin to creating new sources of POPs and thus violates the spirit and purpose of the Stockholm Convention, denying the people their right to a healthy environment and a sustainable future. In terms of policy, the Malaysian government should shut down existing incinerators, reject proposed incinerators and implement alternatives.

As more awareness is created among consumers through highlighting of issue in the popular media, it is anticipated that consumers will demand for sustainable alternatives and solutions that will minimize the exposure to POPs. Consumer awareness, consciousness and demand would be a powerful tool to exert pressure on government and industries to implement plans to eliminate POPs.

A meeting of communities affected by planned incinerators will be arranged to encourage information sharing and concerted response. The planned meeting of community representatives will play a crucial role in spurring common action against POPs and for alternative approaches.

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