

**UNITED NATIONS ENVIRONMENT PROGRAMME**

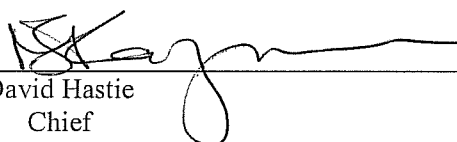
**PROJECT ACTION SHEET**

- 1.1. Title of Project:** Hazardous Substances from Open Burning of Waste in Developing Countries
- 1.2. Project Number:** PO/4030-07-01 **POL-2310-2644-2519**
- 1.3. Title of Sub-Programme:** Technology, Industry and Economics
- 1.4. Geographical Scope:** Global
- 1.5. Implementation:** UNEP/DTIE/Chemicals Branch  
Internal - with partners from Mexico, China, Sweden, and USA
- 1.6. Duration of Project:** Commencing: 1 May 2007  
Completion: 28 February 2009

This Action Sheet, which is transmitted with a copy of the project document/revision, lists the actions required in connection with the implementation of the project. It constitutes the authority from UNEP to the Budget and Financial Management Service (BFMS/UNON) to effect the disbursements listed therein.

Signature:

For the Environment Fund of UNEP



David Hastie  
Chief

Budget and Financial Management Service, UNON

Date: 23 May 07  
16

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**Date:**

**Action**

**Responsible office**

May 2007

Record new commitments

BFMS /UNON

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# 1 SECTION 1: PROJECT IDENTIFICATION

- 1.1. Title of Project:** Hazardous Substances from Open Burning of Waste in Developing Countries
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Internal - with partners from Mexico, China, Sweden, and USA
- 1.6. Duration of Project:** 1 May 2007-28 February 2009
- 1.7. Overall Cost of Project (Expressed in US Dollars):** **US\$ 875716**
- |   |                     |
|---|---------------------|
| Requested from Government of Sweden                 | US\$ 647,716        |
| <u>In-kind contributions</u>                        | <u>US\$ 228,000</u> |
| <b>Overall (Cash + in-kind) Cost of the Project</b> | <b>US\$ 875,716</b> |

Signature: \_\_\_\_\_



Mr. David Hastie  
Deputy Director, DAS/UNON  
Chief, BFMS/UNON

Date: \_\_\_\_\_

23 May 07  
16



## United Nations Environment Programme

برنامج الأمم المتحدة للبيئة · 联合国环境规划署  
 PROGRAMME DES NATIONS UNIES POUR L'ENVIRONNEMENT · PROGRAMA DE LAS NACIONES UNIDAS PARA EL MEDIO AMBIENTE  
 ПРОГРАММА ОРГАНИЗАЦИИ ОБЪЕДИНЕННЫХ НАЦИЙ ПО ОКРУЖАЮЩЕЙ СРЕДЕ

### PROJECT DOCUMENT

#### PROJECT SUMMARY

<b>1.1. Title of Project:</b>	Hazardous Substances from Open Burning of Waste in Developing Countries	
<b>1.2. Project Number:</b>	PO/4030-07-01	<b>POL-2310-2644-2519</b>
<b>1.3. Title of Sub-Programme:</b>	Technology, Industry and Economics	
<b>1.4. Geographical Scope:</b>	Global	
<b>1.5. Implementation:</b>	UNEP/DTIE/Chemicals Branch Internal - with partners from Mexico, China, Sweden, and USA	
<b>1.6. Duration of Project:</b>	1 May 2007-28 February 2009	
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<b>Overall (Cash + in-kind) Cost of the Project</b>	<b>US\$ 875,716</b>	

#### 1.8. Project Summary:

The overall goal of this project is to develop a methodology for determining emission factors for unintentional POPs generated in open waste burning processes. The second objective is to develop scientifically sound emission factors for open burning of waste with active participation of developing countries and under their national and local conditions. The project will provide validated emission factors for the Toolkit and an enhanced methodology for the determination of the national activity. The final users will be Parties to the Stockholm Convention in their national reporting.

The project will assist developing countries and countries with economies in transition to develop accurate release inventories for unintentional POPs listed in Annex C of the Stockholm Convention and national implementation plans for the Stockholm Convention. Since so far, information is almost exclusively only available for PCDD/PCDF, the other unintentional POPs, HCB and PCB (as totals and the dioxin-like to estimate the TEQ share) will be included in this project. The determination of emission factors for PCB and HCB will be the first step towards the systematic development of a Toolkit for these two groups of unintentional POPs.

The project will also give recommendations on implementation of best environmental practices to reduce formation and release of dioxins and furans and to reduce exposure of people living close to sites with such practices.

## 2 SECTION 2: BACKGROUND AND LEGISLATIVE AUTHORITY

### 2.1 Background

The Stockholm Convention on Persistent Organic Pollutants (POPs) entered into force on 17 May 2004. To date, October 2006, the Convention has 132 Parties and 151 signatories. The overall objective of the Stockholm Convention is to protect humans and the environment through elimination of POPs. The Convention presently includes 12 POPs of which nine are pesticides (aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex, and toxaphene), two are industrial chemicals (hexachlorobenzene (HCB) and polychlorinated biphenyls (PCB)), and two are unintentional POPs (polychlorinated dibenzo-*para*-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF)). However also the two industrial POPs, namely HCB and PCB, are included in the list of unintentional POPs since they can be formed and released as byproducts in the same processes that also generate PCDD and PCDF).

Amongst other, Parties to the Convention have to develop National Implementation Plans (NIPs), which is a country's roadmap on measures and strategies to implement the obligations of the Convention. The issue of dioxins and furans (PCDD/PCDF) represents one of the largest difficulties countries in general and developing countries especially have to face. The national (or regional) action plan to be developed for unintentional POPs includes release inventories where countries have to identify and quantify all their dioxin and furan sources. Since developing countries do neither have the financial nor the technical means to measure dioxins and furans, UNEP has been asked to assist in the identification and quantification of PCDD/PCDF sources. Subsequently, the "Standardized Toolkit for the Identification and Quantification of Dioxin and Furan Releases" has been developed and published (Toolkit for short). UNEP's Standardized Toolkit groups the dioxin sources into 10 broad categories. The Conference of the Parties has recommended the Toolkit to be used by countries to establish their release inventories for PCDD/PCDF within their national implementation plans, especially when they do not have own measured data. The Toolkit methodology is based on estimating the releases of PCDD/PCDF from a specified source from the level of the activity and the emission factor (EF).

Results from more than 30 countries that have quantified their PCDD/PCDF emissions show that bad waste management practices, such as burning of waste in the open without any technical equipment is typically the country's largest source. The open burning of waste is addressed in Category 6 of the Toolkit. Open burning of municipal waste – and often mixed with industrial/toxic or hospital waste - in the open is a common practice especially in developing countries and in countries with economies in transition

Under open burning conditions as defined in the Toolkit, mixed waste is burned in the open without any control on good firing conditions (*e.g.*, high temperatures) and without any filters for flue gas cleaning, high amounts of PCDD/PCDF are formed and released (expressed as emission factor). The emission factors for waste dump fires and open waste burning are among the highest in the Toolkit. High emission factors together with high rates for activity at the national level (in some countries, 20-30% of the total waste is being disposed of by open burning) result in high contributions from this source category to the overall dioxin inventory.

Igniting waste dumps or putting fire on waste disposed in a pit or igniting waste piled in a corner of a garden is not only considered bad practice but also results in a higher share in the

dioxin inventory than all industrial sources together. The releases from such practices also result in substantial contamination of the environment and in high exposures of people. Typically, waste dumps are conveniently located close to residential areas and cities. Notwithstanding, when burning the waste in the own gardens, the families are directly exposed to the plumes from the fires. However, inhalation may not be the highest risk, since there may be children playing around the burning sites or people will move in to recover some valuable materials after the fire, *e.g.*, copper and other metals that are left. This work might be performed preferentially by women because they may not have other income and by picking valuables from the dumps would be a source of income. In any case, women and children may have the highest exposures since they might stay in their homes longer than the men. Ingestion of the burned materials/dust would be another pathway of exposure especially for children. Finally, dioxins in the air may contaminate crops and pasture around the burning sites and be transferred to the terrestrial food-chain (*via* grass into meat of cows, sheep and other animals and their products such as eggs or dairy). Very often it has been observed that food of lower quality; *e.g.*, with higher content of pollutants, is being consumed by the local population and the high quality products are exported to generate income in hard currencies.

The Category 6 of the Toolkit consists of two sub-categories, namely (a) for biomass fires such as forest fires, pre-harvest burns of sugar cane, post harvest burns of agricultural wastes, and (b) for open fires of waste.

The default emission factors provided in the Toolkit for open burning of waste result from laboratory scale and simulation experiments from OECD countries. The measurements gave a broad range of emission factors (from a few  $\mu\text{g TEQ}$  per ton of waste burned up to 150,000  $\mu\text{g TEQ/t}$ ). The Toolkit gives two emission factors – 300  $\mu\text{g TEQ/t}$  and 1,000  $\mu\text{g TEQ/t}$  of waste burned. In addition to the wide range of measured results, developing countries are concerned that the wastes burned in the experiments so far do not reflect the composition of their local wastes and would like to see experiments done with their wastes and under their conditions. Further, developing countries are concerned that the barrel burn studies – as performed in the USA - do not reflect their way of waste disposal and would prefer experiments reflecting their national waste burning in pits or waste dump fires. From the scientific point of view, it is worrisome that simple repetition of the burning of the same waste gave emission factors that varied by a factor of 20. This is believed to be caused by random waste orientation affecting the burning conditions, which may have larger impact on emissions than the composition of the wastes. In other words, it is anticipated that there exists a general variability in the PCDD/PCDF emission factor for open waste burning and that the amounts of PCDD/PCDF formed are less dependent on the presence or absence of chlorine, dioxin precursors or catalytic metals present in the waste than the way the waste is being burned. However, this hypothesis still needs to be confirmed.

## 2.2 Legislative Authority

Governing Council Decision GC 19/13 C; Stockholm Convention on Persistent Organic Pollutants, Article 5 and Annex C, SC, Art 5 and Annex C and Decision 2/5 of the 2<sup>nd</sup> Conference of the Parties to the Stockholm Convention to review and update the Toolkit (May 2006).

## 2.3 Project Description

The proposed project will address the issues and concerns mentioned under Background in a joint project:

- (1) with partners from developed countries - Mexico and China - having the expertise with dioxin research and emission factors and providing their developing country waste and the conditions to burn it, and
- (2) partners from developed countries – in Sweden and USA<sup>1</sup> – having existing and well-characterized burning facilities.

Briefly, waste composition surveys will be done to identify the main fractions in the wastes from China and Mexico. It is anticipated that countries will have “rural waste”, which will be low in engineered products such as PVC, electronic equipment, corrugated paper, *etc.*, and “urban waste”, which is characterized by the presence of high contents of such engineered products, which are supposed to introduce chemicals like chlorine, bromine, copper and other components that would favor formation of dioxins and furans. For the “urban waste” different compositions may be determined; *e.g.*, one urban waste that will be high in corrugated paper, textiles or waste from small industries and a second urban waste composition that may be high in “toxic components” such as electric and electronic waste or chlorinated pesticides, treated wood, *etc.* The waste types will be burned as received and be prepared (shredded) under standardized conditions to test the hypothesis that the composition of the waste is of minor importance in determining the range of potential emission factors. Shredding the waste will minimize any potential effects of waste orientation and isolate the composition variable. Developing country representatives from the two countries will twin with the laboratories in Sweden and USA and accompany the burns. After having concluded and agreed on the main drivers that are responsible for the dioxin formation, field experiments will be undertaken in the developing countries. For this, sampling equipment will be developed and given to the developing countries to enable them to take smoke and ash samples on the site from burning waste dumps, pits, piles, *etc.* in various regions in China and Mexico. All samples will be shipped for analysis to an experienced dioxin laboratory.

With the twinning aspect between developed country and developing country researchers/laboratories, the project has a strong capacity building component not only between the research groups but also between the authorities and NGOs. Through the communication strategy to discuss the study design and the results in Mexico and China at stakeholder level, another capacity building component will be inherent to the project (sub-project d). Therefore, the governments of Sweden through the Swedish Environmental Protection Agency (Swedish EPA), Mexico (through National Institute of Ecology-INE), and China (through State Environmental Protection Administration-SEPA), and the United States<sup>2</sup> (through Environmental Protection Agency-EPA) will participate in the workshops and other relevant meetings.

The results from the 30 countries have shown that open burning of waste is especially a

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<sup>1</sup> Note: The experiments to be realized in the US burn hut are not budgeted in the proposal but placed as an option for complementary funding

<sup>2</sup> If applicable

problem of developing countries and mainly occurs in rural areas with low incomes. Such practices are closely related to poverty because uncontrolled waste dumps typically are located close to human settlements. The families living close directly inhale the fumes and their garden produce is contaminated by the smoke from the open burning. Since poor people neither have the economic means nor the technical knowledge, they also ignite their own wastes and thus create their own dioxin sources in their backyards. Therefore, women and children spending most time at home and living close to the burning areas are most exposed and at higher risk than others, *e.g.*, urban and wealthier populations.

The results of the study will be published in the scientific literature but also communicated in laymen's language to be understood by policy makers and will be communicated to the general public. The results will have direct impact on the improvement of the Toolkit and result in higher acceptance of the then reported data on dioxin emissions in the national inventories. The project will provide validated emission factors for the Toolkit and an enhanced methodology for the determination of the national activity. The final users will be Parties to the Stockholm Convention in their national reporting.

In a next step, scientifically sound recommendations can be given on implementation of best environmental practices to reduce formation and release of dioxins and furans and to reduce exposure of people living close to sites with such practices.

### **3 SECTION 3: OBJECTIVE AND RESULTS**

#### **3.1 Objective**

The overall goal of this project is reduction of emissions of unintentional POPs from open burning of waste.

More specifically, the project will develop a methodology for determining emission factors for unintentional POPs generated in open waste burning processes and verify them in field samplings in developing countries under their national and local conditions.

The project will assist developing countries and countries with economies in transition to develop accurate release inventories for unintentional POPs listed in Annex C of the Stockholm Convention and national implementation plans for the Stockholm Convention. Since so far, information is almost exclusively only available for PCDD/PCDF, the other unintentional POPs, HCB and PCB (as totals and the dioxin-like to estimate the TEQ share) will be included in this project. The determination of emission factors for PCB and HCB will be the first step towards the systematic development of a Toolkit for these two groups of unintentional POPs. So far, there are no emission factors for PCB and HCB from open burning of waste at all.

The project will also give recommendations on implementation of best environmental practices to reduce formation and release of dioxins and furans and to reduce exposure of people living close to sites with such practices. However, it should be noted that this project will be limited to the quantitative characterization of the source strength, *i.e.*, how much unintentional POPs are released when burning waste from developing countries in the open. Exposure scenarios to study the impact and possible effects on humans through the food-chain have to be subject of another study and will need site-specific scenarios taking into account local/national/regional bread-basket studies and consumption patterns.



The results will be published and provide input to improve the Toolkit methodology and verify the emission factors generated in this project in other regions in response to Decision SC-2/5 of the second meeting of the Conference of the Parties of the Stockholm Convention.

### **3.2 Results**

1. Technically sound method to determine emission factors for unintentional POPs from open burning of waste accepted by the scientific community;
2. Emission factors for unintentional POPs from open burning of waste endorsed by developing country governments.

## **4 SECTION 4: OUTPUTS, ACTIVITIES, WORKPLAN, AND TIMETABLE, BUDGET AND FOLLOW-UP**

### **4.1 Outputs**

- Sound methodology produced for future projects to determine driving parameters for emission factors for the subcategory of open burning of waste (in developing countries);
- Scientifically sound emission factors for open waste burning in relation to waste composition and burning parameters generated;
- Enhanced experience in developing countries to design studies for determination of emission factors and capacity to determine them analytically
- Experiences in developing countries on communication of scientific results and implementation of measures enhanced.

In more detail, the outputs can be categorized into immediate, intermediate, and long-term achievements as follows:

- **Immediate**

Characterization of open waste burning in developing countries with respect to measured dioxin concentrations (so far, no data available)

Improved knowledge on parameters driving dioxin emission factors

Input to Dioxin Toolkit

Establishment of sampling strategies and characterization of waste burning activities in developing countries

Buy-in of developing countries into dioxin problematic

Awareness raising on "bad" waste management practices (as dioxin sources).

- **Intermediate**

Improved emission factors to be applied in developing countries;

Better characterization of conditions in developing countries

Improved waste management practices in developing countries

Reduced exposures of general population

- **Long-term**

Improved and consistent PCDD/PCDF release inventories for reporting under the Stockholm Convention on POPs

Starting point for implementation of reduction measures of dioxin emissions

Enabling trend analysis on effectiveness of measures taken to reduce dioxin/furan emission from sources

Contribution to poverty reduction and less discrimination of women and children.

## 4.2 Activities

This project proposal is based on the outcomes of two expert workshops, which were held in Melbourne, Australia, 12-14 December 2005 and Mexico City, Mexico, 31 May-2 June 2006. At these workshops, leading dioxin experts and representatives from developing countries have discussed the available information with respect to emission factors for PCDD/PCDF determined for open burning processes listed in Category 6b of the “Standardized Toolkit for the Identification and Quantification of Dioxin and Furan Releases” (Toolkit). This Category 6b lists open fires to burn municipal solid and other wastes in an uncontrolled manner. The study will use real world scenarios, *i.e.*, waste compositions that are actually burned in the open and not be based on waste statistics that typically address the fractions in municipal waste that are generated in the households. Although measured data were available, the experts identified the need to further investigating the scientific basis for the default emission factors from the Toolkit and suggested to initiate measurements to accommodate their concerns. Further, it was noted at several occasions, *i.e.*, Conference of the Parties, that the Toolkit does not provide emission factors for the two remainder groups of unintentional POPs: HCB and PCB. The proposed activities address scientific technical issues such as how to prepare and measure dioxin and furan emissions from open burning processes and therefore set a scientifically sound basis that would allow in future studies to estimate the exposure of people living close to such burning site. The project activities include the following sub-projects:

### (a) Simulated Waste Burns

- Model burns of different waste compositions from developing countries and developed countries in well-characterized burning facilities to identify the main drivers towards high and low emission factors for PCDD/PCDF, PCB, and HCB;
- The selection of the two burn huts is for the following rationale: The burn facilities have their own characteristics and serve different purposes. The Swedish burn facility is smaller and the results will give specific information as to the importance of the chemical composition of the wastes in relation to dioxin formation and release. The US burn facility is larger and has its strengths especially with respect to the simulation of the burn conditions and therefore comes closer to field/real world conditions as the Swedish burn facility. Therefore, the US burn hut will bridge the results from the more laboratory scale Swedish facility to the large scale and real world field sampling (under sub-project b);

- The analysis plans for the Swedish burn facility looks as follows:

Burn experiments	Chinese waste	2 as received	2 shredded	Total of 16 burn experiments
	Mexican waste	2 as received	2 shredded	
	Swedish waste	2 as received	2 shredded	
	Duplicates	2 as received	2 shredded	
Analysis	CHN / MEX /SWE waste burned as received	2+2+2 flue gas	2+2+2 ashes	Total of 34 analyses: 14 flue gas 14 ashes 6 untreated waste
	CHN / MEX /SWE waste burned shredded	2+2+2 flue gas	2+2+2 ashes	
	Duplicates	2 flue gas	2 ashes	
	CHN / MEX /SWE waste unburned	2 + 2 + 2 solid samples		

- The national Swedish samples are needed for the following two reasons:
  - (a) the series of present results needs to be correlated to earlier results from the same facility with Swedish waste, and
  - (b) to directly compare in the same series of experiments the results from the developed country with the developing country results.
- Sub-project (a) would be considered as targeted research to investigate the scientific basis and agree on methodology how experiments should be undertaken to generate emission factors that will be accepted by developed and developing countries.

#### (b) Field Burns in Developing Countries

- Development of protocols and field sampling equipment;
- Field testing with sampling and analysis will be undertaken by the developing country partner at sites in developing countries;
- The field sampling will be performed at sites and involving practices of open burning that were identified at the onset of the project and will result in a better characterization of the conditions (and frequencies) how waste is being burned in the open in developing countries. In this project, it is assumed that there will be five (major) conditions under which the open burning takes place.
- The sampling and analysis plans in the developing countries look as follows (minimum option):

Sampling	China	5 different conditions (or duplicates)	Total of 10 field samplings
	Mexico	5 different conditions (or duplicates)	
Analysis	China	5 flue gas + 5 ash samples	Total of 20 analyses: 10 flue gas 10 ashes
	Mexico	5 flue gas + 5 ash samples	

- Sub-project (b) would validate this information in field experiments. Adequate sampling equipment and methods need to be developed and tested in this sub-project.

#### (c) Determination of Emission Factors

- Evaluation of laboratory and field test data to generate revised emission factors for PCDD/PCDF and new emission factors for PCB and HCB;

- Sub-project (c) will provide a direct contribution to the improvement of the Toolkit taking into account developing country conditions and thus, increasing the acceptance of a harmonized methodology.

It should be noted that the sub-projects (a) and (b) contain quite a lot of duplicate samples in order to study the inherent variability of results, which would be caused by just repeating the same experiment. This is an important aspect in dioxin research and especially when dealing with such types of samples.

#### (d) Communication Strategy

- The project – from design to final results - will be presented at national workshops that will have present all kinds of stakeholders from political decision makers (*e.g.*, SEPA for China, INE for Mexico, Environmental Protection Agency for Sweden; EPA for USA) to concerned/exposed public. The results will be published in scientific literature and in easily understandable language;
- Sub-project (d) will obtain buy-in of the political sector (at local and national levels) and the general public and thus pave the way for the acceptance of the outputs of the project.

#### (e) Proposal for Best Environmental Practice

- The results will be used to propose best environmental practices to reduce the source strength from these activities and reduce the exposure of the population living nearby;
- The proposal will be jointly elaborated by the project representatives – researchers and governmental – including UNEP.
- Sub-project (e) will result in lower emissions in the release inventory from developing countries and provide them with the means to implement dioxin reduction measures. The benefit is with the general population and especially high-end exposed groups such as women and children and the poor.

### 4.3 Workplan and Timetable

The following activities will be undertaken at the times specified below:

Activity	Period for activity (quarter/year)
Sub-project (a)	
Initiation of project; MoUs with pilot countries and institutions	2/2007
Pilot countries to undertake desk study on waste composition and combustion practices	2-4/2007
Model burns in burn hut (Swedish, Chinese, and Mexican waste)	2/2007-3/2007
Analysis of samples	3/2007
Meeting to discuss results	3/2007
Report for Sub-project (a)	4/2007
Sub-project (b)	
Development of protocols and sampling equipment for field burns	1/2008
Identification of sites for field sampling in Mexico and China and sampling	1/2008-2/2008

Analysis of field samples	2/2008-3/2008
Report for Sub-project (b)	3/2008
Sub-project (c )	
Meeting to discuss, evaluate, aggregate results and propose EFs, meeting report	4/2008
Sub-project (d)	
1 <sup>st</sup> stakeholder meetings (in each of the pilot countries)	2/2008-3/2008
2 <sup>nd</sup> stakeholder meeting (in each of the pilot countries)	4/2008
Report and information materials for sub-project (c) and project	4/2008
Sub-project (e )	
Final report	1/2009

#### 4.4 Budget

Please See Annex 1.

## 5 SECTION 5: INSTITUTIONAL AND LOGICAL FRAMEWORKS, EVALUATION

### 5.1 Institutional Framework

UNEP Chemicals Branch, DTIE will implement the project jointly with a steering group consisting of governmental representatives from Sweden, China, and Mexico.

UNEP Chemicals will submit substantive reports to the Swedish government as follows:

- a yearly report on the results obtained by the project. These reports shall be analytical in approach and include a presentation of difficulties and shortcomings and discuss possible remedies.
- a final project report covering all important aspects of the utilisation of the Swedish contribution. The report shall cover the whole project, also components that are not funded by Sweden. It shall also consider the fulfilment of the agreed objectives of the project. This report shall be delivered within six months after the termination of the period of activity as specified in Article VI.

## 5.2 Logical Framework

<b>Objectives</b>			
<b>To reduce emissions of unintentional POPs from open burning of waste</b>			
<b>Intervention Logic</b>	<b>Objectively Verifiable Indicators</b>	<b>Means of Verification</b>	<b>Assumptions</b>
<p><b>Result 1:</b> Technically sound method to determine emission factors for unintentional POPs from open burning of waste accepted by the scientific community</p>	<ul style="list-style-type: none"> <li>• Paper accepted and published in peer-reviewed literature describing the study and its results;</li> </ul>	<ul style="list-style-type: none"> <li>• Scientific journal</li> </ul>	<ul style="list-style-type: none"> <li>• That financial and technical assistance will be available to implement the study;</li> <li>• That PCDD/PCDF, HCB and PCB analysis will be performed in experienced laboratories</li> </ul>
<p><b>Result 2:</b> Emission factors for unintentional POPs from open burning of waste endorsed by developing country governments</p>	<ul style="list-style-type: none"> <li>• New emission factors used in estimation of releases of unintentional POPs from open burning of waste</li> </ul>	<ul style="list-style-type: none"> <li>• Report of official dioxin inventory from developing country Party</li> </ul>	<ul style="list-style-type: none"> <li>• That PCDD/PCDF inventories will be updated by the developing country Party;</li> <li>• That “open burning of waste” will be included in the dioxin inventory.</li> </ul>

### **5.3 Evaluation**

Upon termination, the Evaluation and Oversight Unit will be consulted and responsible for coordinating the activities related to the evaluation and to assist in the selection of an independent evaluation consultant, in coordination with UNEP Chemicals Branch, DTIE, in order to assess project effectiveness and efficiency, and identify lessons learned for future activities. An amount of USD 15,000 has been allocated to undertake the evaluation.

## **6 SECTION 6: MONITORING AND REPORTING**

Visibility and credit will be given to the donors on every event, activity and publication with a clear acknowledgement of the financial support it has provided to support the activity

### **6.1 Annual Progress Reports**

UNEP Chemicals Branch, DTIE will submit to the UNEP/EOU and to UNON Budget and Financial Management Service, annual reports as at 31 December, determining the extent of achievement of results, status and challenges of project implementation, budget management issues, gender implementation, sustainability arrangements, impacts and risks. The reports will be due 31 January.

### **6.2 Final Report**

Within 60 days of the project completion, UNEP/DTIE/Chemicals Branch shall submit to the Chief, Budget and Financial Management Service of UNON a project final report, in accordance with UNEP terminal reporting requirements.

Annually, Self Evaluation Fact Sheets will be submitted due by 31 January.

### **6.3 Substantive Publications**

Reports resulting from the various activities will be considered substantive reports and as such will be routinely forwarded to the Director of the Division of Technology, Industry and Economics. Patents, copyright and Royalties developed or produced under this project will normally be claimed by UNEP

### **6.4 Terms and Conditions**

#### **6.4.1 Non-expendable Equipment**

Procurement of goods and services shall be carried out in accordance with the internal established procurement regulations of the UN and UNEP, including international competitive

bidding when relevant.

Swedish suppliers of goods and services shall be given the same opportunities to participate in the bidding as other suppliers. Local and regional suppliers of goods and services shall be encouraged to submit tenders

UNEP Chemicals Branch, DTIE will maintain records of non-expendable equipment (items costing USD 1,500 or more as well as items of attraction) purchased with UNEP funds, and will submit an inventory of such equipment to the Chief, UNON Budget and Financial management Service, once a year, attached to the substantive report. A final inventory of equipment will be submitted to the Chief BFMS, UNON, within 60 days of the completion of the project.

#### 6.4.2 Responsibility for Cost Over-runs

DTIE is authorised to enter into commitments or incur expenditures up to a maximum of 10 per cent over and above the annual amount Foreseen in the project budget under any budget sub-line provided the total cost of the UNEP annual contribution is not exceeded. This may be done without prior authorisation, but once the need for these additional funds becomes apparent, DTIE shall inform, within 30 days, the Chief, UNON Budget and Financial Management Service about shifts made, and these have to be reflected in a revision to the project document not later than three months after the shifts have been made.



**Hazardous Substances from Open Burning of Waste in Developing Countries**

	2007	2008	TOTAL
<b>10 PROJECT PERSONNEL COMPONENT</b>			
<b>1200 Consultants</b>			
1203 Consultants	11,500	20,000	31,500
<b>1299 Total</b>	11,500	20,000	31,500
<b>1600 Travel on official business</b>			
1601 Staff travel	13,800	15,000	28,800
<b>1699 Total</b>	13,800	15,000	28,800
<b>1999 Component Total</b>	<b>25,300</b>	<b>35,000</b>	<b>60,300</b>
<b>20 SUB CONTRACT COMPONENT</b>			
<b>2200 Sub-contracts (MOUs/LAs for Governments/NGOs, etc.)</b>			
2201 MoUs with universities, governments, etc.	134,500	11,000	145,500
2202 MoUs for analysis	69,000	76,000	145,000
<b>2299 Total</b>	203,500	87,000	290,500
<b>2999 Component Total</b>	<b>203,500</b>	<b>87,000</b>	<b>290,500</b>
<b>30 TRAINING COMPONENT</b>			
<b>3300 Meetings/conferences</b>			
3310 Participants travel subproject (a)	25,400	0	25,400
3311 Participants travel subproject (b)		45,000	45,000
3312 Participants travel subproject (c)	0	12,000	12,000
3320 MoU with governments for stakeholder meetings	25,000	60,000	85,000
<b>3399 Total</b>	50,400	117,000	167,400
<b>3999 Component Total</b>	<b>50,400</b>	<b>117,000</b>	<b>167,400</b>
<b>40 EQUIPMENT AND PREMISES COMPONENT</b>			
<b>4200 Non-expendable equipment</b>			
4201 Sampling equipment for field experiments	0	10,000	10,000
4220 Unspecified Equipment	0		0
<b>4299 Total</b>	0	10,000	10,000
<b>4300 Premises</b>			
4301 Office rental and maintenance of premises			0
<b>4399 Total</b>	0	0	0
<b>4999 Component Total</b>	<b>0</b>	<b>10,000</b>	<b>10,000</b>
<b>50 MISCELLANEOUS COMPONENT</b>			
<b>5200 Reporting cost</b>			
5201 Printing and translations	10,000	20,000	30,000
5220 Unspecified printing/translating/publications	0	0	0
<b>5299 Total</b>	10,000	20,000	30,000
<b>5500 Evaluation</b>			
5501 Evaluation consultant	0	15,000	15,000
<b>5499 Total</b>	0	15,000	15,000
<b>5999 Component Total</b>	<b>10,000</b>	<b>35,000</b>	<b>45,000</b>
<b>Direct Project Cost</b>	<b>289,200</b>	<b>284,000</b>	<b>573,200</b>
<b>Programme Support Cost (13%)</b>	<b>37,596</b>	<b>36,920</b>	<b>74,516</b>
<b>99 GRAND TOTAL</b>	<b>326,796</b>	<b>320,920</b>	<b>647,716</b>

## **Hazardous Substances from Open Burning of Waste in Developing Countries**

**Project No:****UNOG IMIS:**

		2007	2008	TOTAL
<b>10</b>	<b>PROJECT PERSONNEL COMPONENT</b>			
<b>1100</b>	<b>Professional Staff</b>			
1101	Programme Officer (UNEP, partially)	36,000	36,000	72,000
1102	University staff (Sweden)	36,000	36,000	72,000
1103	University staff (China)	15,000	15,000	30,000
1104	Government staff (Mexico)	15,000	15,000	30,000
<b>1199</b>	<b>Total</b>	<b>102,000</b>	<b>102,000</b>	<b>204,000</b>
<b>40</b>	<b>EQUIPMENT AND PREMISES COMPONENT</b>			
<b>4200</b>	<b>Non-expendable equipment</b>			
4201	Computer Hardware		0	0
4220	Open burn facility and other equipment (Sweden University)	20,000	4,000	24,000
<b>4299</b>	<b>Total</b>	<b>20,000</b>	<b>4,000</b>	<b>24,000</b>
<b>99</b>	<b>GRAND TOTAL</b>	<b>122,000</b>	<b>106,000</b>	<b>228,000</b>

in-kind contributions