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Final Results Workshop of the UNEP/GEF project ‘Establishing the Tools and Methods to Include the Nine New POPs into Global Monitoring Plan’  
and  
Inception Workshop for the UNEP/GEF project ‘Continuing Regional Support for the POPs Global Monitoring Plan under the Stockholm Convention in the African Region’

**Wednesday, 6 July–Friday, 8 July 2016**  
***Swiss Spirit Hotel & Suites Alisa***  
**Accra, Ghana**

## Report of the Workshop

1. The workshops on final results of the UNEP/GEF projects “Establishing the Tools and Methods to Include the Nine New POPs into Global Monitoring Plan” and “Continuing Regional Support for the POPs Global Monitoring Plan under the Stockholm Convention in the African Region” were held back to back and organised jointly by UNEP and Ghana Environmental Protection Agency (EPA). The workshops took place at the *Swiss Spirit Hotel & Suites Alisa* in Accra, Ghana, from 6<sup>th</sup> to 8<sup>th</sup> July 2016.
2. The objectives were to communicate the outcomes and results of incorporating the new POPs (11 POPs listed by COP4, COP5, and COP6 into the annexes of the Stockholm Convention) into the First Round of the GMP project and to launch the second phase of the POPs GMP in the African Region explaining the activities and responsibilities of principal actors and relevant stakeholders for the implementation of the project.
3. All the fifteen countries from Africa involved in the project were present at the workshops, namely: DR Congo, Egypt, Ethiopia, Ghana, Kenya, Mali, Morocco, Mauritius, Nigeria, Senegal, Tanzania, Togo, Tunisia, Uganda, Zambia. In total 43 participants registered and attended the workshops.

# 1. Opening of the workshops

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4. The Environmental Protection Agency (EPA) of Ghana, together with the United Nations Environment Programme (UNEP) welcomed the participants on Wednesday 6<sup>th</sup> July 2016.
5. Prof. Vincent K. Nartey, Ghana Environmental Protection Agency (EPA) made reference to the Global Monitoring Plan (GMP) under the Stockholm Convention on Persistent Organic Pollutants (POPs). He welcomed the support by UNEP projects, funded by the Global Environment Facility (GEF). The new UNEP/GEF project responds to Article 16 of the convention, which requires to evaluate the effectiveness of the convention four years after entry into force then periodically, by monitoring the concentration of POPs in the environment and in humans. The project aims at producing high quality monitoring data, which is essential for evaluating the effectiveness of the Convention and for developing regulations, policies and programs. However, data quality requires good analytical capacities.
6. The participants of the workshop then introduced themselves in turn.

## 1.1 Overall presentation of the UNEP/GEF projects on analysis and monitoring of POPs

7. Ms. Jacqueline Alvarez, UNEP Chemicals and Waste Branch, presented the main features of the UNEP/GEF projects on analysis and monitoring of POPs. Following the inclusion of nine new POPs into annexes A, B or C of the Stockholm Convention at the fourth meeting of the Conference of the Parties (COP) in 2009, the COP requested that the guidance document for the GMP be updated. The UNEP/GEF project on the tools and methods for new POPs was developed to respond to this COP decision. It has been executed by the Chemicals Branch of UNEP's Division of Technology, Industry and Economics (DTIE) and focused on guidance for sampling and analysis of perfluoroalkyl substances (PFAS) and polybrominated flame retardants (polybrominated diphenyl ethers (PBDE; hexabromobiphenyl (HxBB)). During the implementation of the project, additional POPs, listed by the 5<sup>th</sup> and the 6<sup>th</sup> meetings of the Conference of the Parties, endosulfan and hexabromocyclododecane (HBCD) have been included. The project started in August 2011 and ended in June 2016.
8. Ms. Alvarez gave an overview of the UNEP/GEF GMP projects in the last ten years. Starting with the Global Laboratory Capacity Building (2005-2008), the first phase of GMP1 (2009-2013), then the Development of New Tools and Methods to Analyse the new POPs (2012-2015) and the current phase II of GMP2 (2015-2019). Regarding some findings/results from GMP1, Ms. Alvarez highlighted the great achievement for the African region to start the human milk surveys during the first phase of GMP. However, she mentioned the timing problems encountered by the countries for obtaining the ethical clearance, this means that for GMP2 African countries should start this process as soon as possible in order to avoid the sampling of human milk to be delayed.

9. Ms. Alvarez also introduced the second phase of the UNEP/GEF GMP regional projects to support implementation of the global monitoring plan in the regions (hereinafter referred to as UNEP/GEF GMP2). The GMP2 projects covers four different (sub) regions, namely Africa, Asia, Latin America and the Caribbean (referred to as GRULAC), with a total of 42 countries whereby the majority (fifteen) are in the Africa region. They have a timeframe of four years (2015 – 2018) and are being implemented and executed by UNEP. The total budget of the projects is 56,954,105 USD, of these 13,775,000 USD from the GEF Trust Fund (4,208,000 USD for Africa) and 43,179,105 USD of co-financing (10,190,200 USD for Africa). The objective of these projects are to strengthen capacity for the implementation of the updated GMP and to create the conditions for sustainable monitoring of the 23 POPs in each region. This is done through five components mainly focusing on strengthening existing capacities for POPs analysis in abiotic and biotic matrices.

10. Countries were requested to sign a Small Scale Financial Agreement (SSFA) with UNEP that will guide them into the country specific activities and deadlines. In addition, UNEP have sub-contracted expert laboratories (CVUA, IVM, MTM, RECETOX) in order to perform training and analysis.

11. The next steps for the GMP2 projects implementation are: to sign the Agreements with the participating countries (SSFA), each agreement will be tailored according to the national activities; in order to proceed with the SSFA, the capacities and training needs of the countries will be assessed; countries are invited to provide all the information and labs checklists as soon as possible.

12. The presentation can be found at the following link: [http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/1\\_gmp2\\_africa\\_unep\\_j\\_alvarez.pdf](http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/1_gmp2_africa_unep_j_alvarez.pdf)

## 2. Including the nine new POPs into the GMP

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13. The UNEP/GEF project ‘Establishing the Tools and Methods to Include the Nine New POPs into Global Monitoring Plan’ generated a number of outputs such as guidelines or training/explicative movies. The main achievements were presented by their authors.

### ***1.2 Standard operating procedures for the new POPs and presentation of the PFAS movie***

14. Professor Dr. Jacob de Boer, IVM VU University, Amsterdam, the Netherlands, gave an overview of the different standard operational procedures (SOPs) developed during the UNEP/GEF project on “Tools and Methods to Include the Nine New POPs into the Global Monitoring Plan for POPs”.

15. He started with an introduction of the new POP compounds to be analysed (i.e., chlordecone;  $\alpha$ -,  $\beta$ - endosulfan and endosulfan sulfate;  $\alpha$ -,  $\beta$ - and  $\gamma$ -HBCD;  $\alpha$ -,  $\beta$ - and  $\gamma$ -HCH, PBB

153; PeCBz; PBDE 47, 99, 153, 154, 175/183; linear and sum of PFOS), then highlighted that there is already a lot of information and guidance available, as well as a set of regional reports from previous work that can be very useful for the countries.

16. Prof. de Boer then presented the SOPs for the new POPs, starting with the example of PFAS. The SOPs are guidelines that lead to good results if followed precisely. However, he continued saying that it is possible to deviate from the procedures defined in the SOPs; provided that, quality control/quality assurance (QC/QA) are needed in order to optimise and validate the results.

17. In most of the available guidelines, there is a section on how to avoid background contamination in the laboratory, e.g. dust is a potential source of contamination or materials and instruments could be dirty. Moreover, it is very important the selection of right materials for sampling and for analytical instruments. The company provider of the equipment should be asked to do certain checks. The choice of analytical method should be needs-oriented and fitted for purpose, so it requires a special calibration. It should be noted that: (i) sample preparation of water, milk, and serum/plasma samples is similar but different from that for air; (ii) extraction involves Soxhlet extraction and solid phase extraction (SPE); (iii) clean-up is used depending on the complexity of the sample matrix; (iv) method validation should use Interlaboratory Studies, Standard Reference Materials, Certified Reference Materials and spiking experiments; (v) when performing instrumental analysis, UPLC-ESI-MS/MS should be used and operated in negative ion mode. All these steps need to be optimized.

18. Prof. de Boer showed the list of materials and reagents to use, then explained the procedures for air sampling using polyurethane foam (PUF) and analysis, as well as for water (based on the UNEP guide on PFOS analysis in water), for human milk (based on the UNEP/WHO protocol for sampling of human milk) and for human serum. He presented the method validation and performance, giving key information on sensitivity and accuracy, repeatability and reproducibility.

19. The presentation is available at the following link: [http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/2\\_sops\\_for\\_new\\_pops\\_accra\\_j\\_de\\_boer.pdf](http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/2_sops_for_new_pops_accra_j_de_boer.pdf)

20. He concluded his presentation by listing the steps for instrumentation analysis as well as the mass settings for PFAS analysis and then introduced the UNEP movie on PFAS analysis, which was produced by his institute.

21. The video is available at: <https://www.youtube.com/watch?v=Rcjqg8HTMxs>.

### ***1.3 Development of the guidance document on PFAS in water***

22. Professor Dr. Heidelore Fiedler, international expert from Örebro University, gave a presentation on the UNEP guideline for PFAS in water which was an output of the UNEP/GEF project on tools and methods for the new POPs.

23. She started by showing the three steps of a monitoring plan, namely: (i) planning; (ii) sampling; and (iii) analysis (incl. reporting).

24. She then introduced the composition and work of the PFAS expert group, which included 14 top experts from a wide range of countries and institutions. The guide focuses on PFOS (which is listed among the new POPs of the Stockholm Convention) and PFOA (although it is not included in the SC), which are characterized by their high water solubility. The guide is composed of instructions on: (i) sampling matrices and site; (ii) storage, extraction, clean-up and analysis; (iii) sampling frequency; (iv) possible sampling locations; and (v) interlaboratory assessment (for QA/QC). A pilot testing was undertaken in early 2014 and was followed by an expert consultation in fall 2014.

25. Prof. Fiedler presented the chemical structure of difference PFAS compounds, and showed a comparative table between direct versus passive water sampling (which favours direct water sampling). She then explained the (minimum and optimum) sampling frequency for different (baseline or trend) water stations.

26. This was followed by a brief overview of the discussion within the PFAS expert group on sampling and analysis issues, and the recommendations that were agreed in 2014 regarding: location, frequency, sampling method, minimum data to report, sample pre-treatment and chemical analysis. For example, estuaries are recommended as sampling sites with a frequency of 4 times per year (trying to avoid drought or freezing conditions).

27. The presentation is available at the following link: [http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/3\\_pfos\\_water\\_guideline\\_h\\_fiedler.pdf](http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/3_pfos_water_guideline_h_fiedler.pdf)

#### **1.4 Results of the pilot field study on air (PAS/PUF) and water**

28. In presenting the results of the pilot testing for the UNEP/GEF project on tools for new POPs, Dr. Fiedler started by presenting the pilot for monitoring of new POPs in air, which took place in 2013-2014 in four countries (Fiji, Kenya, Mali and Uruguay) using PAS/PUF during a three months' exposure. The analysis was done in expert laboratories and included endosulfans, PBDEs, PBB, HBCD and PFAS. The new POPs were found in the majority of the samples whereby the African samples showed a dominance of chlorinated pesticides.

29. The sampling scheme of the four countries were presented, as well as pictures of the sites and the results of the analysis. In all samples, the predominant congener was  $\gamma$ -HCH for the HCHs,  $\alpha$ -endosulfan for the three endosulfans and PBDE-47 for the PBDEs. Regarding PFAS in PUFs, samples from Mali and Uruguay needed additional clean-up steps, therefore they had poor recoveries. However, PFOS was quantifiable in all samplers, which demonstrates that PUFs are suitable to capture this compound as well. The comparison between the initial POPs and the new ones indicated lower concentrations of endosulfans to DDTs and drins, for pesticides, and for industrial chemicals, similarly low concentrations of pentachlorobenzene than HCB, as well as lower PBDE<sub>8</sub> than PCB<sub>6</sub>. HBCD was not quantifiable in any of the air samples.

30. In conclusions for air, the pilot testing was very helpful and showed PUF/PAS to be suitable for sampling all POPs currently listed in the SC. Some modifications are needed however for the clean-up of PUFs for PFAS. Quantification of chlordecone was not possible, as was the analysis of

endosulfans and chlordecone in the same extract. The experiences fed into the GMP guidance as well as the UNEP/GEF GMP2 projects. Some additional conclusions were given for HBCD analysis, and a PAS/PUF sampling scheme was proposed, consisting of 12 samplers and an even/odd numbering system to differentiate which samples were to be shipped to expert laboratories abroad (odd numbers) and which one to keep in the country (even numbers).

31. Regarding pilot testing of new POPs in water, experiments were undertaken in 2014 in six countries (Fiji, Kenya, Mali, Uruguay, the Netherlands and Sweden), using one-day grab sampling. The analysis of PFOS was done in expert laboratory. PFOS could be quantified in all except the sample from Uruguay. The pilot study proved very successful. Following the pilot study, an expert workshop was then held in Amsterdam to discuss amendments to the GMP guidance document to include PFOS.

32. The presentation is available at the following link: [http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/4\\_new\\_pops\\_in\\_air\\_and\\_water\\_h.fiedler.pdf](http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/4_new_pops_in_air_and_water_h.fiedler.pdf)

### ***1.5 Presentation of the instructive movie for the cleaning of PUF disks***

33. Dr. Katerina Sebkova, director of the Stockholm Convention Regional Centre in the Czech Republic hosted at the Research Centre for Toxic Compounds in the Environment (RECETOX) at Masaryk University in Brno, Czech Republic, presented her department, a research and educational centre which in addition to many research projects also provides international cooperation and capacity building activities (incl. the implementation of the mandate of the Stockholm Convention Regional Centre for Central and Eastern Europe since 2007). The activities include among others support for monitoring of POPs and other chemicals in more than 40 countries in Europe and Africa via MONET monitoring programme. Furthermore, RECETOX supports sound chemicals management worldwide and generates information to link environment and health and electronic tools for data analyses (i.e. GMP data warehouse [www.pops-gmp.org](http://www.pops-gmp.org) or environmental database GENASIS [www.genasis.cz](http://www.genasis.cz)). For the GMP/GEF project RECETOX provides samplers but also visualization, storage and analyses of data.

34. Dr. Sebkova then introduced the video “Monitoring of POPs in Ambient Air by Passive Sampling”, available in four languages (EN, FR, RU, ES). The video was produced by RECETOX for UNEP Chemicals and Waste Branch in spring 2015 as a training movie with instructions for the cleaning of PUF disks used in passive samplers for ambient air. The video is available at: <https://www.youtube.com/watch?v=JBnFptglyPA>

35. After the video was showed, during the Q&A session, some participants wanted to know the relationship between the MONET Africa project and the second phase of GMP. Dr. Sebkova replied that the GMP2 is more focused on building monitoring and sampling capacity in participating countries in the short term, while one of the main purpose of the MONET programme is to assure data for Global Monitoring Plan of the Stockholm Convention in the long term to establish trends in POP occurrence, where feasible.

36. The presentation is available at the following link: [http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/5\\_recetox-pufmovie-ghana-2016\\_k\\_sebkova.pdf](http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/5_recetox-pufmovie-ghana-2016_k_sebkova.pdf)

### ***1.6 Results and lessons learned from the second round of the Biennial Global Interlaboratory Assessment of POPs Laboratories***

37. Professor Dr. Heidelore Fiedler, international expert from Örebro University, gave the last presentation of the morning session by summarizing the results and lessons learned from the second round of the 'Biennial Global Interlaboratory Assessment of POPs laboratories' which focused on seven standard solutions: (i) OCPs, (ii) PCBs, (iii) PCDD/PCDF, (iv) dl-PCB, (v) PBDE/PBB, (vi) PFOS and (vii) PFAS and six naturally contaminated test samples (ambient air, fish, human milk, human blood, water, and sediment). In addition, a transformer oil test sample was offered as well.

38. Overall the degree of participation reflected a high interest of laboratories to participate in the assessment, with 105 labs from 48 countries submitting registration of samples. At the end, 89 laboratories submitted results for at least one (group of) POP and one test sample. Among these, only 9 countries from Africa registered with a total of 12 laboratories, however only five laboratories were able to provide results. It was noted that in the African region there were no labs reporting on PCDD/PCDF, dl-PCB, PBDEs or PFAS. Capacity for analysis of PFAS existed only in the WEOG and Asian regions; for dioxin-like POPs and PBDEs, in addition to these two regions, a few results were received from the GRULAC region as well. No capacity was found in the CEE and in Africa in this Interlaboratory Assessment. Dr. Fiedler emphasised that the participation in the interlaboratory assessment is very important for the laboratories for their own quality control, as a proof towards external clients. Successful participation will also assist them to receive accreditation at national level for global recognition.

39. The presentation is available at the following link: [http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/6\\_interlab\\_africa\\_h\\_fiedler.pdf](http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/6_interlab_africa_h_fiedler.pdf)

### ***1.7 Highlights and outcomes of the UNEP/GEF GMP1 projects***

40. The afternoon session was open by Dr. Heidelore Fiedler, she presented the main highlights of the first phase of the UNEP/GEF projects on the GMP, which took place between 2009 and 2012. The objective of the project was to build regional capacity on analysis and data generation for POPs in core matrices to enable the participating countries to contribute to the regional GMP reports submitted to the Stockholm Convention COP. The UNEP GMP1 phase consisted of four medium-size regional projects, namely the Pacific Islands region, West Africa, East and Southern Africa, and GRULAC, with a total of 32 countries. This was complemented with two SAICM QSP projects, one in Cuba and the other in the Bahamas, Barbados and Haiti.

41. Dr. Fiedler briefly mentioned that the overall rating of the terminal evaluation of the four UNEP/GEF projects were rated as “highly satisfactory”, including delivery of activities and outputs, relevance, efficiency, attainment of results, sustainability, country ownership, and UNEP supervision. However, there were also several drawbacks that reduced efficiency and hindered the progress of the projects in some countries including delays in signing MOUs (most countries), the movement of the project coordinator without proper handing over (Egypt), delays in funds transfer (e.g. Senegal, Brazil), or delay in getting ethics committee approval (e.g. Brazil and Zambia). As a result, two no-cost extensions (corresponding to 15 months) were required to ensure that project activities were successfully completed.

42. The presentation is available at the following link: [http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/7\\_africa\\_ws\\_gmp1\\_highlights\\_h\\_fiedler.pdf](http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/7_africa_ws_gmp1_highlights_h_fiedler.pdf)

### **1.8 Africa Regional Coordination**

43. Dr. Vincent Madadi, Department of Chemistry of University of Nairobi, gave a presentation on the regional coordination framework for the implementation of GMP2 activities in Africa. He highlighted the establishment of Regional Organization Groups (ROGs). The ROGs have different tasks such as: promoting and updating the regional strategy for implementation of the GMP; follow the status of monitoring data and data gaps in the region; give recommendations for follow up GMP activities in the region; coordinating with Parties involved in sampling and analytical arrangements; ensuring compliance with protocols for QA/QC; and maintaining interaction with other regional organization groups and the Secretariat.

44. Dr. Madadi explained that Africa region has six sub-regions established for the implementation of the GMP activities. Each sub-region is headed by one ROG member who is in charge of overseeing communication with the SC focal points and the national contacts. He also briefly mentioned the main strategic partners in implementing GMP in Africa: UNEP Chemicals and the GEF; two backup labs (IVM and MTM Orebro); RECETOX (coordinating also MONET-Africa programme); the World Health Organization (WHO) and the Global Atmosphere Passive Sampling (GAPS) programme.

45. After the presentation there was a session of Q&A. The first question was on the differences in monitoring pollutants between Europe and Africa: in Europe there is a focus more about indoor pollution and dust, while in Africa the monitoring is more related to outdoor pollution (PCB), DDT and flame retardants. Then another question was, given the fact that we are monitoring POPs levels, what are we actually doing to reduce POPs levels? And whether it is enough. The answer was that the actual purpose of GMP is to inform decision-makers and Governments to allow them in setting priorities and addressing issues in a more efficient way. Responding to another question whether samples are being archived for later analysis, Dr. Sebkova said that RECETOX is working to establish a data bank in the long-term (maybe 2017), this would be a possibility for air and water, but depends on whether the databank is built. Otherwise, currently collected samples are analyzed and not archived. Zambia then intervened, with Mr. Kapindula, emphasizing the lack of hardware/equipment in the Africa region; in response, Mr.



Adu-Kumi highlighted the need to participate in the rounds of interlaboratory assessments, as an exercise to increase capacity. A final remark was made by Dr. Sebkova, underlining the importance to have a regional strengthening, coordination and strategic institutional partnerships, since many institutions are ready to help.

## **1.9 Country Highlights, Experience and Expectations**

46. The first day was closed with the presentations made by the Countries. They were invited to share experiences, highlights, lessons learned from GMP1 and expectation from the next phase of GMP2. The countries that took the stage were Kenya, Mali, Mauritius, Egypt, Togo, Nigeria, Uganda, Ethiopia, Senegal, Congo, Zambia and South Africa (as an observer). The presentations can be found for consultation on the UNITAR – POPs GMP webpage: <http://www.unitar.org/cwm/implementation-pops-monitoring-plan-african-region-under-stockholm-convention>

## **1. Thursday, 7<sup>th</sup> July 2016**

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### **2.1 Monitoring Plan and Effectiveness Evaluation**

47. Ms. Ana Princeputu, BRS Secretariat, started the morning session of the second day of the workshop giving her presentation via Skype about the role of the BRS Secretariat. She gave an overview of the BRS mandate and guidance documents. The guidance documents are available on the BRS as well as UNEP Chemicals and Waste webpages. The Secretariat also contributes in numerous capacity building activities in the GMP framework (e.g. by providing fellowships for participation in the capacity building at the RECETOX Summer School), as well as in identifying strategic partners. Lastly, Ms. Princeputu underlined that BRS will play a key role in the communication of the project results, such as in using its data for the GMP reports and the effectiveness evaluation.

48. The presentation is available at the following link: <http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/12.ambient.air.sampling.and.analysis.k.sebkova.pdf>

### **2.2 The role of UNITAR in the project**

49. Mr. Andrea Cararo, UNITAR Chemicals and Waste Management, gave a presentation on the role of UNITAR, its mandate and different programs. He explained to the participants the activities that UNITAR Chemicals and Waste Programme will carry during the first implementation stage of the UNEP/GEF GMP2 project. The main objective is to provide technical expertise and administrative support to UNEP. UNITAR hired Dr. Heidelore Fiedler as an external consultant to

provide the technical expertise. He continued listing the current activities such as the organization and logistics of the four inception workshop in each region; collecting SSFAs information from the countries; develop questionnaire to identify national laboratories' capacity and training needs. Mr. Cararo finished his presentation mentioning that UNITAR is also maintaining and updating a project website with all the relevant documents and workshop reports.

50. The presentation is available at the following link: [http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/11.\\_unitars\\_role\\_in\\_the\\_gmp2\\_a\\_cararo.pdf](http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/11._unitars_role_in_the_gmp2_a_cararo.pdf)

### **2.3 Air sampling and Analysis**

51. Dr. Katerina Sebkova, RECETOX, presented the experiences in POPs monitoring in air from the past projects, starting with the GAPS project in 2005, the MONET programme in 2008 and the first phase of GMP in 2012. As an example, she presented the map of POPs monitoring in Africa. She then briefed the participants on the conclusion of the calibration study between passive and active sampling in Africa and on arrangements for PAS sampling in this GEF project: one air sampling site per country; sampling material dispatched by RECETOX; tracking information and dispatching of exposed disks for analyses every 6 months. Dr. Sebkova also mentioned the Active Sampling that will take place in at least two sites in the Africa region, then the analysis will be performed by expert labs (RECETOX and MTM Orebro).

52. During the Q&A session, Dr. Sebkova pointed out that several countries involved in the project have already information generated through the MONET programme, as a consequence, and to avoid duplication of work, the GMP2 could be an opportunity to set up different air sampling sites than those used for MONET, however the decision on site selection is left to the countries. The following question from Mr. Yunuss (Nigeria) was that if the site is not used in the past we cannot talk of trend. The response was that if the previous GEF project used a site, it could be a good opportunity to continue there (in case it is not a MONET site) and provide more information and potentially establish a trend there. But if that was not the case, then Dr. Sebkova concurred, the two years sampling will not bring trend as of yet, but certainly will develop a country capacity for air sampling. Moreover, regarding shipments, was noted by the participants that is better to ship directly to the national coordinator (e.g. Ministry) instead of shipping to the sampling site.

53. The presentation is available at the following link: [http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/12.ambient\\_air\\_sampling\\_and\\_analysis\\_k\\_sebkova.pdf](http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/12.ambient_air_sampling_and_analysis_k_sebkova.pdf)

### **2.4 Human milk surveys: The Role of the UNEP/WHO reference laboratory**

54. Dr. Ralf Lippold, CVUA Freiburg, highlighted the two pillars of the role of the projects, namely (i) representativeness of sampling, and (ii) reliability in analysis. One pool of 50 donors per 50 million of population is needed, however countries with population greater than 50 million should include at least one additional participant for each million population above the 50 million threshold. In the case of countries that are well over 50 million, a second pooled sample is

recommended, if feasible. He also stressed the advantage of mothers' milk over human blood to identify human exposure to POPs. He emphasised that pools of mixed samples are more representative and offer better estimation of human exposure. This method is extremely cost-effective, but has the disadvantage of not having details about individuals. He referred to the UNEP/WHO guidance document on human, and presented the criteria for determining the selection of donors.

55. Dr. Lippold also discussed the quality control programme, which follow the international accreditation and validation (DIN EN 17025), and aims at ensuring there is no change in quality. The laboratories can be selected either by planning capacity building activities or through contracting. The expert laboratory serves as a backstopping to guaranty quality.

56. It was highlighted that the most critical point is getting the ethical clearance, as it will often require time. It is therefore crucial to know about the person in charge of the survey as soon as possible, to plan early enough the shipment of samples (taking into consideration the respective holidays) and to receive them properly and on time in order to stay frozen (it was warned not to use dry ice). Glass wares will be provided clean and ready to use.

57. Dr. Lippold also reminded the participants to respect the requested amounts: 50 ml per individual (minimum amount) and 1,250 ml for the pooled sample. He also emphasised to store samples in refrigerators (deeply frozen for stabilisation).

58. The presentation is available at the following link: [http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/13. human milk surveys and the role of unep-who reference lab r. lippold.pdf](http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/13_human_milk_surveys_and_the_role_of_unep-who_reference_lab_r_lippold.pdf)

## **2.5 Water Sampling and Analysis**

59. Professor Dr. Heidelore Fiedler, international expert from Örebro University, took the floor to present the water sampling and analysis. Since the topic was already covered in her previous presentation, she gave an overview talk explaining that for GMP2 rivers will be used for water sampling.

60. It was suggested to do the water sampling together with the collection of the PUFs, that is every 3 months. A map of Africa was showed and five rivers were determined for the collection of samples, namely: Nile, Senegal, Volta, Zambesi and Niger. It was suggested by Kenya to take into account only large river estuaries, also Egypt intervened proposing to take samples from different spots all over the river (Nile). Dr. Fiedler replied that is not recommended to do the sampling at the source of the river, she emphasized that the samples should optimally be taken as close as possible downstream or at the estuary. Emphasis was made to ensure regional coverage and representativeness of the water sampling sites to minimise sub-regional data gaps. The countries were invited to propose themselves for the water sampling, five countries were identified: Egypt, Senegal, Zambia, Kenya, Ghana.

## **2.6 National Sampling**

61. Professor Dr. Jacob de Boer, IVM VU University, briefed the participants on the protocol for the sampling and pre-treatment of national samples in the framework of the capacity building activities. The main objective will be to identify and understand possible differences between the analytical methods for POPs used in the participating countries and the reference laboratories, this will be possible because the analysis is conducted on the same sample in participating country and reference laboratory.

62. Participating countries are free in their selection of samples, however there will be one mandatory matrix to be sampled in all countries (fish) plus other matrices free of choice (soil, sediment, eggs, butter, fish oil, beans or dust). Some samples like rice, corn, vegetables, rice straw, yam are strongly discouraged (no measurable POPs level). Regarding national sample of soil, Dr. Fiedler highlighted that if the country already submitted a soil sample in 2011 from one site, it is recommended to choose another site.

63. Prof. de Boer made clear that circa 10 samples are requested for each country and the reference laboratory will do the sample analysis as received. This requires careful packaging (send in glass jars with screw caps and water for PFOS in polypropylene jars), using a courier and provide letter for customs.

64. The presentation is available at the following link: [http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/14\\_protocol\\_for\\_the\\_sampling\\_and\\_pre-treatment\\_of\\_national\\_samples\\_j.de\\_boer\\_0.pdf](http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/14_protocol_for_the_sampling_and_pre-treatment_of_national_samples_j.de_boer_0.pdf)

## **2.7 Training of National Laboratories**

65. Dr. Esteban Abad, CSIC, gave a presentation regarding the set-up of the national cross-cutting activities in the UNEP/GEF GMP2 project in Africa. In particular, the activities regarding the training of national laboratories. He explained that countries should decide which analytes and matrices will be part of the training, which should go in line with the capacity of the laboratory selected (the lab must be operational). Needs of laboratories are currently being evaluated after the initial questionnaire, then a more detailed checklist (sent by UNEP/UNITAR) needs to be completed as soon as possible.

66. Dr. Abad, answering a question from Kenya about the possibility for experts to carry the standards, emphasized that chemicals, reagents and standards should be in place before the training starts because experts cannot travel with any chemicals. In addition, procurements should be taken from the custom by the country and pay the taxes if needed. For this purpose, the correct address, phones, emails of the person in charge is a minimum requirement before any material is shipped.

67. He also gave an overview of the training conducted during GMP1, explaining results, lessons learned from the participating laboratories.

68. The presentation is available at the following link: [http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/15\\_training\\_of\\_national\\_labs\\_e.abad.pdf](http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/15_training_of_national_labs_e.abad.pdf)

## 2.8 Interlaboratory Assessments

69. Professor Dr. Heidelore Fiedler, international expert from Örebro University, gave the last presentation of day two, briefing the participants on the 3<sup>rd</sup> round of the Interlaboratory Assessments. She showed the geographic and regional distribution of 171 registered laboratories: 67 Asia-Pacific; 23 CEE; 39 GRULAC; 27 WEOG and 16 from Africa.

70. Some participating countries expressed their willingness to participate, however Dr. Fiedler made clear that there is no possibility at this stage to include additional countries. Registration closed on 1 May 2016 and the result submission will be before 16 September 2016. By the end of July the test samples will be shipped as follows: test standard solutions (OCPs, PCB(6), HxBB, toxaphene) and test samples (Sediment, fish, water) from IVM VU University; test standard solutions (PCDD/PCDF, dl-PCB, HBCD, PFAS) and test samples (Human milk, human serum, air extract) from MTM Örebro University, Sweden.

71. Dr. Fiedler pointed out that we have a large amounts of new labs in this round, however we are missing around 50 of the laboratories that participated in the last round. This can create some difficulties in terms of capacity building and sustainability of the project that need to be addressed in the future.

72. It was noted that the laboratory from Tanzania was excluded from the registered labs list, however is functional and operational so it is now included in the third round of the interlaboratory assessments. One country expressed the opinion to have a better outreach in disseminating the invitations for the future interlabs assessments; UNEP and the expert labs emphasised that they went through all possible channels (emails, website advertising, etc.).

73. The presentation is available at the following link: [http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/16\\_interlaboratory\\_assessments\\_3rd\\_round\\_h\\_fiedler.pdf](http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/16_interlaboratory_assessments_3rd_round_h_fiedler.pdf)

## 2. Friday, 8th July 2016

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### 3.1 Work plan and Timetable

74. Mr. Jost Dittrkist, UNITAR Chemicals and Waste Management, started the morning session of the last day of the workshop by presenting the work plan and deadlines valid for all the participating countries. A table of the workplan in details was shown, discussed and amended with the countries. In details The GMP2 project has four main components: (a) air sampling and analysis, (b) human milk sampling and analysis, (c) water sampling and analysis, and (d) interlaboratory assessment. It was reinforced the commitment to start the sampling on 1<sup>st</sup> October 2016.

75. Zambia expressed their worries about the UNEP difficulties in disbursing the funds; UNEP replied that everything possible will be done to ensure the funds are available on time to start the sampling, however countries are requested to start in any case as a co-finance activity.

### **3.2 National laboratories capacities and needs**

76. Another table was shown and discussed with the countries on the laboratory capacities and needs. It was highlighted that countries should propose only one laboratory that will receive the training from the expert laboratories, however it was explained personnel from other national labs could be invited to join the in-house training in the selected laboratory.

77. Each participating country gave the nomination for the proposed laboratory/ies to be trained. For this purpose, it was emphasized that the labs checklist is needed by the experts in order to assess the labs capacities and needs that will be addressed during the training. Prof. de Boer and Dr. Fiedler wanted to make clear that training will not start from scratch, for this purpose the labs with the more value added will be selected.

78. During the discussion emerged that Togo doesn't have the capacities to analyses POPs, also Congo, together with Ethiopia, needs to carefully assess their capacities in order to receive training or not. Ghana and Mauritius asked to add also PBDE in the labs training. The laboratory in Mali have the GC-MS/MS but they cannot use it yet, more details are needed. Morocco proposed three labs for the experts' assessment in order to select the one eligible for training; Nigeria also proposed two laboratories. It was confirmed that in Zambia two labs have the GC-MS/MS instrumentation.

79. It was reminded to participating countries that funds are available for only 8 countries to be trained, UNEP will try to make more funds available in order to train more laboratories. However, Prof. de Boer express his concern of the lack of routine demonstrated by the labs trained during GMP1. Having a routine of activities on a regular basis is considered crucial in a laboratory, otherwise the momentum derived from the training will be lost after few months. It was also highlighted that the continuous change of personnel in the labs is counterproductive, because then the new personnel need to be trained again.

### **3.3 Air sampling sites**

80. Mr. Dittkrist and Mr. Cararo, continued the discussion about the sampling sites, trying to identify the sites for the PAS. The sampling site should ideally be placed at a regularly used site with available temperature and weather data (e.g., national metrological institute/station). It should be accessible (for operation and maintenance) and safe (in order to stay three months without supervision, except in case of storm). However, the site cannot change during the project. Sampling procedures (SOP) will be distributed together with sampling material from RECETOX. Further reference on air sampling are also available in the GMP guidance document (UNEP/POPS/COP.7/INF/39).

81. Countries were asked to confirm the air sampling sites or to propose new ones. Most countries confirmed the same sites used during the GMP1. Nigeria asked if the site can be different from the one already use in the MONET project, they would like to have one with less impact, because now it's near a main road; Dr. Fiedler replied that it is not relevant the proximity to a main road, however it is highly recommended to change site in order to avoid replication with the MONET result. Mauritius expressed the wish to change the current site to another one located higher on a hill, they will send coordinates soon. Egypt revealed the intention to change the GMP1

site, transferring it from Cairo to a meteorological station in Alexandria. Ethiopia, Tanzania, Tunisia, Morocco will provide the new coordinates of the sampling site as soon as possible.

### **3.4 Small Scale Funding Agreements (SSFAs) with the Countries**

82. Mr. Jost Dittkist and Mr. Andrea Cararo, UNITAR Chemicals and Waste Management, presented to the participants the basic draft of the SSFA that each participating countries will sign with UNEP. As for the countries, each will have a national coordinator, who will play a key role for national implementation, but also contact persons for air, water and human milk sampling. They should keep good communication with the relevant agencies and consultants in the implementation. The detailed budget was presented; each country will receive a minimum of 86,000 USD plus additional funds depending on their capacities of carrying the analyses.

83. During the Q&A session, it was emphasised that countries are expected to do sampling for all POPs and all matrices, and in the required amount (e.g. PUFs for each quarter), as well as an additional matrix according to national priorities. However, this will be discussed in details with each country, since the level of capacities vary from one to another. Ghana and Kenya will conduct also Active Air Sampling.

### **3.3 Ghana Environmental Protection Agency**

84. Dr. Sam Adu-Kumi, Ghana Environmental Protection Agency (EPA), gave a presentation of the GMP activities for POPs conducted in Ghana. In 2008-2009 with the background air monitoring, passive air samplers were used in three locations (Kwabenya, East Legon, Lake Bosumtwi); then Ghana was involved in the MONET programme, implemented in 2008 and coordinated by RECETOX, which donated in 2013 an active air sampling station.

85. He also showed pictures of sampling sites and explained that the existing data for PFOS in water were produced using active and passive samplers through the pilot studies conducted in 2014 (running river) and passive sampling in 2016 (lake). Regarding the human milk studies, donors were identified in 6 urban and rural communities in the South (Ada and Accra), Middle (Jachie/Pramso and Kumasi) and in the North (Tolon and Tamle).

86. In his final remarks, Phd. Adu-Kumi pointed out that the region should streamline POPs management into regional development agenda to support the reduction and elimination of POPs in the environment. He also suggested to include POPs activities under the national/regional activities to implement the 2008 Libreville Declaration on Health and environment strategic Alliance (HESA).

87. The presentation is available at the following link: [http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/17.\\_gmp2\\_activities\\_for\\_pops\\_in\\_ghana\\_s.\\_adu-kumi.pdf](http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/17._gmp2_activities_for_pops_in_ghana_s._adu-kumi.pdf)

### **3.4 Introduction to the IOMC Toolbox**

88. Mr. Andrea Cararo, UNITAR Chemicals and Waste Management, closed the third day of the workshop introducing the IOMC Toolbox for decision making in chemicals management. He explained the challenge behind the origination of the toolbox, as we are all aware of the hundreds of tools and guidance documents that are relevant for countries in order to implement sound management of chemicals.

89. However, finding the most appropriate tool or guidance to address a specific national issues can be difficult and confusing. The toolbox provides the solution and identify the most relevant and efficient national chemicals management actions, taking into account the resources available. Mr. Cararo showed that the toolbox is an internet-based platform, free of charge, that presents to the users the relevant IOMC resources, guidance documents, and training material available for consultations.

90. The toolbox focuses on seven schemes for chemicals management, namely: (i) National Management Scheme for Pesticides; (ii) Occupational Health and Safety System; (iii) Chemicals Accidents Prevention and Response; (iv) Industrial Chemicals Management System; (v) Classification and Labelling System (GHS); (vi) Supporting Health Authorities in Management of Chemicals; (vii) Pollutant Release and Transfer Register (PRTRs).

91. The presentation is available at the following link: [http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/18.\\_iomc\\_toolbox\\_-\\_general\\_introduction\\_a\\_cararo.pdf](http://www.unitar.org/cwm/sites/unitar.org.cwm/files/uploads/18._iomc_toolbox_-_general_introduction_a_cararo.pdf)

### **3.5 Final Remarks**

92. The Africa GMP2 Inception Workshop held in Accra (Ghana), closed the series of four regional workshops, started in December 2015 in the GRULAC region. After the last presentation, Ms. Alvarez took the floor for a wrap up session, in order to make sure that no questions/doubts were left behind. Then she started a round of final greetings/lesson learned and all the participants expressed their positive impression during the 3 days of the meeting.

93. The Workshop was seen as a successful discussion for initiation of the project. In the final conclusions made it was underlined that for a successful POPs GMP Project in Africa the strengthening of capacity building at national level is crucial for the current and future sustainability of the monitoring and analyses of POPs.



## List of Annexes:

- **Annex I : List of acronyms**
  - **Annex II : Agenda**
  - **Annex III : Concept note**
  - **Annex IV : Work plan and timetable**
  - **Annex V : List of participants**
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## Annex I: List of acronyms

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CETASD	Centre for Environmental Technology and Sustainable Development
COP	Conference of the Parties
CRMs	Certified reference materials
DDT	Dichlorodiphenyltrichloroethane
dl-POPs	Dioxin-like persistent organic pollutants
dl-PCBs	Dioxin-like polychlorinated biphenyls
DTIE	Division of Technology, Industry and Economics (of UNEP)
ECD	Electron-capture detector
ESI	Electrospray ionization
FOSA	Perfluorooctane Sulfonamide
GEF	Global Environment Facility
GC	Gas chromatography
GEF	Global Environment Facility
GMP	Global Monitoring Plan
GRULAC	Latin American and Caribbean Group
HBCD	Hexabromocyclododecane
HDPE	High-density polyethylene
HRMS	High-resolution mass spectrometry
HxBB	Hexabromobiphenyl
ILSs	Interlaboratory studies
LC	Liquid chromatography
LoD	Limit of detection
LRMS	Low-resolution mass spectrometry
MS	Mass spectrometry
NIP	National Implementation Plan
OCP	Organochlorine pesticides
PBDE	Polybrominated diphenyl ethers
PCBs	Polychlorinated Biphenyls

PCDDs	Polychlorinated dibenzo-p-dioxins
PCDFs	Polychlorinated dibenzofurans
PFAS	Per- and polyfluoroalkyl substances
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonic acid
POPs	Persistent Organic Pollutants
PUF	Polyurethane foam
QA	Quality assurance
QC	Quality control
SOP	Standard operating procedure
SPE	Soxhlet extraction and solid phase extraction
SRMs	Standard Reference Materials
SSFA	Small scale funding agreement
UNEP	United Nations Environment Programme
UNITAR	United Nations Institute for Training and Research
UPLC	Ultra high performance liquid chromatography
WHO	World Health Organization



## Annex II: Agenda

Time	Agenda Item	Presenter
<b>Wednesday, 6<sup>th</sup> July, 2016</b>		
8:30 – 9:00	Registration of participants	
9:00 – 9:15	Opening of the workshop	UNEP, Ghana EPA
9:15 – 9:30	Introduction of participants	All participants
9:30 – 10:00	Overall presentation of the UNEP/GEF projects on analysis and monitoring of POPs	Jacqueline Alvarez (UNEP Chemicals and Waste Branch)
10:00 – 10:30	<i>Cocoa Break</i>	
<b>Final Results Workshop for the project 'Establishing the Tools and Methods to Include the Nine New POPs into Global Monitoring Plan'</b>		
10:30 – 11:15	Standard operating procedures for the new POPs	Jacob Boer (IVM)
	Presentation of the PFAS movie	Jacob Boer (IVM)
11:15 – 11:45	Development of the guidance document on PFAS in water	Heidelore Fiedler (MTM)
	Results of the pilot field study on air (PAS/PUF) and water	Heidelore Fiedler (MTM)
11:45 – 12:00	Presentation of the instructive movie for the cleaning of PUF disks	Katerina Sebkova (Recetox)
12:00 – 12:30	Results and lessons learned from the second round of the Biennial global interlaboratory assessment of POPs laboratories	Heidelore Fiedler (MTM)
12:30 – 13:30	<i>Lunch Break</i>	
<b>Inception Workshop of the Project 'Continuing Regional Support for the POPs Global Monitoring Plan in the African Region'</b>		
13:30 – 14:00	Highlights and outcomes of the UNEP/GEF GMP1 projects	Heidelore Fiedler (MTM)
14:00 – 14:30	African regional coordination	Vincent Madadi (University of Nairobi, Kenya)
14:30 – 15:30	Country highlights and expectations	All countries
15:30 – 16:00	<i>Cocoa Break</i>	
16:00 – 17:30	Country highlights and expectations (con.)	All countries
<b>Thursday, 7<sup>th</sup> July, 2016</b>		

## UNEP/GEF POPs GMP - African Region

9:00 – 9:30	Monitoring plan and effectiveness evaluation	BRS (online)
9:30 – 10:00	Introduction to the UNEP/GEF project “Continuing Regional Support for the POPs Global Monitoring Plan in the Africa Region” (including the role of UNEP as the project EA)	Jacqueline Alvarez (UNEP Chemicals and Waste Branch)
10:00 – 10:30	The role of the expert laboratories in the project	Heidelore Fiedler (MTM)
10:30 – 11:00	<i>Cocoa Break</i>	
11:00 – 12:15	WHO: activities undertaken	WHO
12:15 – 12:30	The role of UNITAR in the project	Andrea Cararo (UNITAR)
12:30 – 13:30	<i>Lunch Break</i>	
13:30 – 15:30	Set-up of the national and cross-cutting activities in the UNEP/GEF GMP2 project in Africa	
	A) Air sampling and analysis	Katerina Sebkova (Recetox)
	B) Human milk sampling and analysis: the role of the UNEP/WHO reference laboratory	Ralf Lippold (CVUA)
	C) Water sampling and analysis	Heidelore Fiedler (MTM)
	D) National Sampling	Jacob Boer (IVM)
	E) Training of national laboratories	Esteban Abad (CSIC)
	F) Interlaboratory assessments	Heidelore Fiedler (MTM)
15:00 – 15:30	<i>Cocoa Break</i>	
15:30 – 17:00	Workplan and timetable	Jost Dittkrist, Andrea Cararo (UNITAR)
19:30	<i>Welcome dinner/cocktail</i>	
<b>Friday, 8<sup>th</sup> July, 2016</b>		
9:00 – 10:00	National budgets	Jost Dittkrist, Andrea Cararo (UNITAR)
10:30 – 11:00	<i>Cocoa Break</i>	
11:00 – 12:30	Discussions on the agreement between UNEP and the countries participating in GMP2	Jacqueline Alvarez, Heidelore Fiedler, Jost Dittkrist, Andrea Cararo
12:30 – 13:30	<i>Lunch Break</i>	
13:30 – 15:00	Administrative issues for the implementation	All Countries
15:00 – 15:30	<i>Cocoa Break</i>	
<b>Introduction to the IOMC Toolbox for Decision-Making in Chemicals Management</b>		
15:30 – 17:00	Introduction to the IOMC Toolbox and live demonstration	Andrea Cararo (UNITAR)
17:00 – 17:15	Wrap-up and assessment of the workshops	Jacqueline Alvarez (UNEP Chemicals and Waste Branch)



## Annex III: Concept Note

### A) Operating Details:

- **Inception workshop:** Final results workshop on the UNEP/GEF project 'Establishing the Tools and Methods to Include the Nine New POPs into Global Monitoring Plan (GMP)' and Inception Workshop for UNEP/GEF project 'Continuing Regional Support for the POPs Global Monitoring Plan under the Stockholm Convention in the Africa Region'.
- **Dates and time:** Wednesday 6 July, 2016 – Friday 8 July, 2016.
- **Venue:** Swiss Spirit Hotel & Suites Alisa  
Address: 21 Dr. Isert Road, North Ridge - Accra, Ghana
- **Hosting institutions:** Ghana Environmental Protection Agency
- **Participants:** Two participants *per* participating country<sup>1</sup>.
- **Registration:** Participants will be registered at the venue at 8:30 a.m. on Wednesday 6 July, 2016 with their passports.
- **Contact persons:** Dr. Sam Adu-Kumi (Email: sam.adu-kumi@epa.gov.gh) at Ghana EPA and Ms. Haosong Jiao (E-mail: Haosong.Jiao@unep.org) at UNEP.

### B) Objectives

- Communicate the outcomes and results of incorporating the new POPs (11 POPs listed by COP4, COP5, and COP6 into the annexes of the Stockholm Convention) into the First Round of the GMP project.
- Launch the UNEP/GEF project 'Continuing Regional Support for the POPs Global Monitoring Plan under the Stockholm Convention in the Africa Region' and detail the activities and responsibilities of principal actors and relevant stakeholders for project implementation with a workplan, timetable and budget.

### C) Background

Article 16 of the Stockholm Convention on Persistent Organic Pollutants (POPs) requests parties to evaluate the effectiveness of the Convention four years after the date of entry into force of the Convention and periodically thereafter. The effectiveness evaluation includes a Global Monitoring Plan (GMP), which records the presence of POPs in the environment and in humans. Such monitoring and subsequent assessment should be undertaken at regional basis. The objectives of the GMP are to identify changes of POPs concentrations with time and assess POPs regional and global transport. The GMP focused initially on the core matrix human milk/blood to examine human exposure, and ambient air to examine long-range transport. With the addition of PFOS to the convention, water has been recommended as a core matrix for this new POP.

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<sup>1</sup> Please note that each country has already designated coordinators for these projects and their presence is recommended.

The Conference of Parties (COP) completed its first effectiveness evaluation at its fourth meeting in 2009 (COP4) based in part on the Regional Monitoring Reports, summarized in the Global Monitoring Report. Among other things, the Monitoring Report stresses the limited data available and constrained capacity for sustained monitoring in the African region. In order to improve this situation for future assessments, the reports stresses that capacity-building for persistent organic pollutant monitoring programmes for most countries in the region remains the top priority recommendation and provides some detailed recommendations in this regard. These include in particular: performance of interlaboratory comparison tests; improving skills for sampling and analysis; strengthening the infrastructure in existing laboratories to provide capability to analyse the core media; implementation of quality assurance and quality control measures; and financial assistance to establish long term programmes and self-sufficient laboratories as well as networking among POPs monitoring experts.

The COP4 also agreed upon the essential modalities for the environmental monitoring component of the subsequent evaluations and included nine new chemicals in the POPs list (decision SC-4/10-18; Annexes A, B, and C). Later, COP5 listed endosulfan in Annex A (decision SC-5/3), and COP-6 listed hexabromocyclododecane (HBCD) into Annex A (decision SC-6/13).

Four GEF MSP projects were conducted in parallel in Africa, Asia, Latin American and the Caribbean (GRULAC) and the Pacific regions by UNEP/DTIE Chemicals Branch with financial assistance from the GEF from 2009 to 2012. These projects enabled provision of quality data on human exposure and environmental concentration of the 12 POPs originally included for the effectiveness evaluation. In decision SC-6/23, the COP requested the Secretariat “to continue to support training and capacity-building activities to assist countries in implementing the global monitoring plan for subsequent effectiveness evaluations and to work with partners and other relevant organizations to undertake implementation activities”. UNEP, with financial support from GEF, is ready to start the implementation of four GMP follow-up projects (GMP2) in the African, Asian, GRULAC and Pacific Regions.

The objective of the GMP2 projects is to strengthen the capacity for implementation of the updated POPs GMP, and to create the conditions for sustainable monitoring of the 23 POPs in each region. The projects have an expected duration of four years. Each regional project will:

1. Secure conditions for successful project implementation;
2. Build capacity and generate data on analysis of core abiotic matrices (air and water)
3. Build capacity and generate data on analysis of core biotic matrices (human milk)
4. Assess existing analytical capacities and reinforce national POPs monitoring; and
5. Secure conditions for sustainable POPs monitoring.

UNEP is the executing agency for the Africa, Asian and Pacific Regions. The Stockholm Convention Regional Centre (SCRC) in Uruguay is the executing agency for the GRULAC region. The projects will be implemented in close cooperation with, among others, the Secretariat of the Basel, Rotterdam and Stockholm Conventions (BRS Secretariat), the World Health Organization (WHO), UNITAR, and five expert laboratories (IVM VU University, MTM Oerebro, CSIC, CVUA, and RECETOX).



## Annex IV: Work plan and Timetable

UNEP as Executing Agency is included in overall coordination and in general, in all activities.

	Activity	Country / Actors	Tentative dates / deadlines	Objective / Remarks
1	Organization of a <b>regional inception workshop</b> ; objective: Launching of project and preparation of detailed workplan for project implementation	All countries; expert laboratories and other partners	06-08 July 2016	Launch the GEF-funded project to prepare regional support for the GMP in Africa and detail the activities and responsibilities of relevant stakeholders for project implementation with a workplan and budget
2	Assignment of <b>responsible staff and contact persons</b> for national coordination, air and water sampling, human milk survey, and POPs analysis (including identification of national laboratories)	Countries; UNEP and UNITAR to assist	08 July 2016 (end of the inception workshop)	The names and contact details of the national counterparts and the nomination of national laboratories are needed before any further steps can be taken
3	Provision of <b>addresses for the shipment of materials</b> for air/water sampling and the human milk survey			The addresses are needed in order for the expert laboratories to ship the materials needed for the sampling exercises (bottles, PUFs etc.)
4	Provision of <b>information relevant for the SSFAs</b>			The following is needed: full name and address of the institution entering into the SSFA, contact person(s) for the SSFA (normally the national coordinator), bank information, person to sign the SSFA
5	Identification of <b>sampling sites</b> for air and water	Countries; UNEP to assist	26 August 2016	Countries to send name of the site, GIS coordinates and address <ul style="list-style-type: none"> <li>• 1 passive air sampling site per country (can be the site used in GMP1)</li> <li>• 2 active air sampling sites in total</li> </ul>



	Activity	Country / Actors	Tentative dates / deadlines	Objective / Remarks
				(Ghana, Kenya) <ul style="list-style-type: none"> <li>water sampling sites (optimally near the mouth of a large river)</li> </ul>
6	Development of detailed national <b>workplan and budget</b>	Countries; UNEP and UNITAR to assist	12 August 2016	The national workplan and budget should be based on the workplan and budget contained in the SSFA and flesh it out in more detail, adapted to each specific country; it should cover the whole project duration (4 years)
7	<b>Passive air sampling and analysis</b>	Countries; expert laboratories; UNEP	By 05 August 2016 samplers and PUFs to be sent by RECETOX  Sampling starts on 1 October 2016, ends on 30 September 2018	<ul style="list-style-type: none"> <li>Exposure periods of 3 months for 2 years (October – December, January – March etc.); 8 sets in total (1 blank PUF); PUFs are removed and new PUFs placed every three months</li> <li>Each country receives at least 7 PAS and 70 PUFs</li> <li>PUFs should be labeled (as indicated in the instructions to be sent by RECETOX) and stored at -18 C</li> <li>Samples should be sent to the national and expert laboratory (per exposure period: 3 PUFs to IVM-VU, 2 PUFs to MTM-Oerebro and 2 PUFs to the national laboratory) – when to be decided by each country and the expert laboratories (e.g. after 6 months)</li> <li>IVM-VU, MTM-Oerebro and the national laboratory will analyse the samples for various POPs</li> <li>Important: do not forget custom letters</li> </ul>
8	<b>Water sampling and analysis</b>	5 countries; MTM-Oerebro	First sampling on 31 December 2016, last on 30 September 2018	<ul style="list-style-type: none"> <li>Every 3 months for 2 years (31 December, 31 March, 30 June etc.); the water sample can be taken the same day that the PUFs are exchanged</li> <li>8 samples needed in total</li> <li>The container is placed in the water and taken out (several times), but the container should not stay in the water (see and carefully follow instructions developed by MTM-Oerebro)</li> <li>MTM-Oerebro will analyse the water samples for PFOS</li> <li>Important: do not forget custom</li> </ul>

	Activity	Country / Actors	Tentative dates / deadlines	Objective / Remarks
				letters
9	Human milk survey	Countries; CVUA	Identification of potential donors as soon as possible  Ethical clearance to be obtained by 31 December 2016  Milk collected and national pool sent to CVUA and national laboratory latest by 31 October 2017	<ul style="list-style-type: none"> <li>Materials (bottles) and instructions to be send by CVUA</li> <li>Pooled samples to be send to CVUA for analysis (aliquots to MTM Örebro)</li> <li>Example of national protocol to be provided by UNEP</li> <li>Important: do not forget custom letters</li> <li>Samples to be stored in the fridge at -18C</li> </ul>
10	Laboratory trainings	National laboratories; expert laboratories; UNEP; UNITAR	All laboratories identified by: 08 July 2016  Laboratory surveys/identification of training needs to be completed as soon as possible  Trainings to be delivered by from fall 2016 to 2017	<ul style="list-style-type: none"> <li>Initial questionnaire to identify laboratories; more detailed survey to identify capacities and training needs</li> <li>Trainings will be delivered by RECETOX (2 courses), MTM-Oerebro (3 courses), and IVM-VU (5 courses)</li> <li>Need to decide the dates for the trainings</li> </ul>
11	National samples	Countries; expert laboratories; national laboratories; UNEP	Choose samples of interest by; collect and ship samples to laboratories as soon as possible	<ul style="list-style-type: none"> <li>At least four samples of matrices of major national interest per country</li> <li>Fish should be chosen by all countries; other matrices can be more freely chosen (e.g. eggs)</li> <li>Shipment of national samples for POPs analysis to developing country laboratory and expert laboratories (IVM-VU and MTM-Oerebro) for mirror analysis</li> </ul>
12	3 <sup>rd</sup> and 4 <sup>th</sup> global interlaboratory	IVM-VU, MTM-	Periods 2016/2017 and	<ul style="list-style-type: none"> <li>Participation is free of costs for</li> </ul>

	<b>Activity</b>	<b>Country / Actors</b>	<b>Tentative dates / deadlines</b>	<b>Objective / Remarks</b>
	<i>assessments</i>	Oerebro; national laboratories; UNEP	2018/2019  Invitations sent; registration closed; new round to start in early 2018  Shipment of test samples to participating labs started; to be finalized soon (and 2018)  By 16 September 2016 (and in 2018): results reported by participating labs  Analysis of results towards the end of 2016 (and in 2018)	developing countries laboratories <ul style="list-style-type: none"> <li>• Evaluation of analytical data and interpretation of results through MTM-Oerebro and IVM-VU</li> <li>• Expert labs will contact developing country labs and exchange results; results will be confidential; only codified data publicly available</li> </ul>
<b>13</b>	<b>National reports and sustainable regional monitoring plan</b>	Countries; regional GMP coordinator; UNEP	Final national reports by 31 January 2020  Sustainable regional monitoring plan by 31 March 2020	<ul style="list-style-type: none"> <li>• The national report summarizes the project implementation and presents the results (including data; photos should be provided)</li> <li>• The sustainable regional monitoring plan will contain conclusions and recommendations to ensure that the countries continue to maintain their monitoring capacity beyond the project</li> </ul>



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