



Caribbean Sub-Regional Workshop on the Updating of National Implementation Plans (NIPs) and POPs Waste under the Stockholm Convention



08TH TO 10TH DECEMBER 2014

THE HILTON HOTEL AND CONFERENCE CENTRE, PORT-OF-SPAIN, TRINIDAD AND TOBAGO.

BACKGROUND

The Basel Convention Regional Centre for Training and Technology Transfer for the Caribbean Region (BCRC-Caribbean) in collaboration with the Secretariat of the Stockholm Convention on Persistent Organic Pollutants (SSC) hosted a Caribbean Sub-Regional Workshop on the updating of National Implementation Plans (NIPs) and POPs Waste under the Stockholm Convention. The workshop was held at the Scarlet Ibis conference room, at the Hilton Hotel and Conference Centre in Port-of-Spain, Trinidad and Tobago from 08th to 10th December 2014.

Under the Stockholm Convention on Persistent Organic Pollutants (POPs), the addition of chemicals to Annexes A, B or C of the Convention triggers the need for most Parties to review and update the NIPs in accordance with decision SC-1/12. In 2009, nine (9) new chemicals were added to the Annexes of the Convention, endosulfan was added in 2011 and the official notification for hexabromocyclododecane (HBCD) was communicated in 2013. The HBCD amendment entered into force for Parties on 26 November 2014. The process of reviewing and updating the NIPs are challenging for countries that lack adequate resources and technical capacity, hence there is need for assistance in that regard and in particular, in addressing newly listed POPs that is widely used for industrial purposes and is contained in products and articles.

At the fourth meeting of the Conference of the Parties (COP) to the Stockholm Convention, in accordance with a decision to identify any additional guidance that might be required to assist parties in their development and implementation of the Convention, a set of guidance documents was developed to assist countries in reviewing and updating their NIPs with information relating to newly listed POPs. While updating the NIPs, Parties are expected to evaluate the effectiveness of the action plans and strategies included in the original NIP. These documents can assist in developing strategies to restrict and eliminate the newly listed POPs by providing guidance on establishing inventories, controlling the import of new POPs, monitoring the presence of products and articles containing new POPs, selecting best available techniques and best environmental practices for the management of new POPs.

However, the review of the adopted strategies and measures to reduce or eliminate releases of Annex C POPs, require an elaborate updated release inventories in order to evaluate whether the unintentional releases actually decreased. The harmonized framework for establishing release inventories under Article 5 of the Stockholm Convention is provided by the Standardized Toolkit for Identification and Quantification of Dioxin and Furan Releases (Toolkit). A set of revisions and updates of the Toolkit, including emission factors, was presented at COP fifth meeting. The revision of emission factors published in the 2005 Toolkit edition is triggering the need for revision of the initial inventories, which have been based on the 2005 Toolkit edition, in order to obtain consistent trends in releases over time.

The training workshop targeted Government representatives from the twelve (12) English-Speaking Caribbean Parties to the Stockholm Convention tasked with working with the NIPs of their respective countries. As such, the workshop aimed to achieve the following objectives:

1. Fostering participants' understanding of the scope of the obligations to update and review their NIPs under Article 7 of the Convention in light of the newly added POPs;
2. To increase participants' capacity to make an effective use of the guidance documents and other training tools when updating their NIPs in the light of the new POPs listed;
3. To strengthen the capacity of Parties to develop effective strategies and action plans towards the elimination of newly listed POPs and enable them to meet their obligation under the Convention to transmit updated NIPs to the COP;
4. To raise awareness of Parties on revised and new information available in the Toolkit, train parties in the use of the Toolkit and to elaborate inventories of sources and releases of Annex C POPs, as well as inventory updates and revisions;
5. Knowledge transfer about the guidance documents on NIP updating to the Stockholm Regional Centres leading to increased capacity for sustained delivery, at the regional level, of technical assistance for NIP review and updating and NIP implementation; and
6. Increasing participants' understanding of the technical guidelines on POPs wastes under the Basel Convention.

The workshop component of the Programme targeted the following twelve (12) English speaking countries of the Caribbean sub-region:

- Antigua and Barbuda;
- Bahamas;
- Barbados;
- Belize;
- Dominica;
- Guyana;
- Jamaica;
- St. Kitts and Nevis;
- St. Lucia;
- St. Vincent and the Grenadines;
- Suriname;
- Trinidad and Tobago.

Upon its completion, the entire the training workshop is expected to assist the Caribbean countries in overcoming their challenges in reviewing and updating their NIPs as the Stockholm Convention evolves and to ensure that the guidance available under the Convention are fully utilised by the Parties as they implement and comply with the Convention over time.

WORKSHOP PROCEEDINGS

This workshop involved the understanding of POPs listed in the Annexes of the Convention in 2009 and 2011, with references made to polychlorinated dibenzo-p-dioxin (PCDD) and polychlorinated dibenzofuran (PCDF) as well as the screening and analysis of the new POPs such as polybrominated diphenyl ether (PBDE) and perfluorooctanesulfonic acid (PFOS). Technical presentations were done by the BRS Secretariat's staff together with an international consultant, as well by a local consultant with the BCRC-Caribbean. All the presentations made during the workshop are available online at the link https://app.sugarsync.com/wf/D7142258_70884723_088662. Practical, interactive group exercises were done on each day and the participants had a field visit to Trinidad Cement Limited (TCL).

The participants were grouped according to Tables. Table 1 included participants from St Vincent and the Grenadines, Antigua and Barbuda and St. Lucia. Table 2 comprised Suriname and Belize whilst Table 3 had participants from Trinidad and Tobago, St. Kitts and Nevis and Dominica. Eight out of the 12 countries invited attended the workshop. The final agenda for the workshop is contained in Annex I and the official participant list can be found in Annex II to this document.

DAY 1 PROCEEDING

Opening Session

The participants were welcomed by Dr. Khan, the director of BCRC-Caribbean. This was followed by a safety briefing explaining the evacuation procedure for the Hilton Hotel and Conference Centre by their HSSE sergeant. Dr. Khan (BCRC-Caribbean) explained that the workshop is important as it will prepare the Caribbean sub-region to comply with the Stockholm Convention, whilst allowing these countries to update their NIP. Ms. Jacqueline Alvarez, Programme Officer from the Secretariat of the Basel, Rotterdam and Stockholm (BRS) Conventions, was introduced and Dr. Khan explained that over the next three (3) days the exercises are simple and the participants will be working in plenary with the aim of properly understanding the details for updating the NIPs to ensure that when each country is undertaking the actual process, each participant at the workshop will have a thorough understanding of the procedures involved.

Ms. Alvarez thanked Dr. Khan for hosting the workshop and stated that she hoped the sessions would be interactive and countries would be able to make amendments to their NIP under the Stockholm Convention. The importance of good interaction at the workshop was stressed. Ms. Alvarez mentioned that the workshop is due to some amendments in the Stockholm Convention, hence it is important to understand the chemicals listed in the Annexes of the Convention as well as all the other commitments under the Convention. She stated that the NIPs should be country driven and should be a working not shelved document to ensure sustainability. Ms. Alvarez wished for a good workshop.

Ms. Tatiana Terekhova, Programme Officer from the Secretariat of the BRS Conventions then spoke on developing synergies between the Conventions to discuss issue of waste and any other important developments under the Basel Convention. An example was made of the issue of definitions under the

Basel Convention and emphasis was placed on the problem of chemicals and waste as this is extremely important for sustainable development. However, it has been difficult to pass on this message of sustainability as many countries tend to focus on other issues such as water, poverty reduction and agriculture. Next year the work of chemicals and waste would be formally part of the inter-governmental process for sustainable development goals which should be adopted officially in September 2015 and the Secretariat of the BRS Conventions will continue to ensure that the issue of chemical waste management is properly reflected in the 2015 development agenda. Ms. Terekhova reiterated that the workshop should be an interactive session instead of a formal meeting.

Dr. Khan then introduced the BCRC-Caribbean office and all the participants then introduced themselves stating their designation.

Session 1: Understanding POPs – Addressing uPOPs

Ms. Terekhova (BRS Secretariat) spoke briefly on Article 7 of the Stockholm Convention stating that every time there is an amendment to the Annex of the Convention, the NIP should be revised and updated to establish a sustainable platform within the NIP. It was then stated that less than 20 countries have submitted an updated NIP, with Kenya being the only developing country. The updated NIPs were due in 2012.

The BRS Secretariat suggested that the NIPs should be updated in such a way that as new POPs are added to the Convention, this information can be added as a new chapter to the existing NIP but it is essentially up to the country to decide the overall format of the NIP document.

Presentation I “Sub-regional workshop on updating national implementation plans and POPs wastes” by Ms. Terekhova (BRS Secretariat).

This very brief presentation gave an overview of the objectives of the workshop and the training involved. The objectives included the following:

- To foster the participants’ understanding of the scope of the obligations to update and review their NIPs under Article 7 of the Convention in light of the newly added POPs;
- To increase participants’ capacity to make an effective use of the guidance documents and other training tools when updating their NIPs in the light of the new POPs listed;
- To strengthen the capacity of parties to develop effective strategies and action plans towards the elimination of newly listed POPs and enable them to meet their obligation under the Convention to transmit updated NIPs to the COP;
- To raise awareness of parties on revised and new information available in the Toolkit, train parties in the use of the Toolkit and to elaborate inventories of sources and releases of Annex C POPs, as well as inventory updates and revisions;
- To increase participants’ understanding of the technical guidelines on POPs wastes under the Basel Convention and other relevant guidance applicable to the NIP process.

The training methodology for the workshop comprised of online training and face to face interactions to discuss some of the newly added POPs to the Convention as well as POPs waste.

Comments and Questions

- No questions or comments

Group Exercise- Ice Breaker

Each table was given three (3) questions to discuss and then asked to provide feedback accordingly. The questions and answers are as follows:

1. Define the terms exemption and acceptable purpose? Give examples.
Ms. Alvarez (BRS Secretariat) explained that POPs exempted for use meant that alternative chemicals exist but not available at the moment and the exemption would be reviewed and revised every five years whilst acceptable purpose meant that there are no alternative chemicals available and specific use of the POP may be allowed within limits. There is no time limit for review unless specified by the Conference of the Parties (COP).
2. What do the following acronyms stand for: PBDEs, PeCBz, PFOS, WEEE and PCCD/PCDF? State another acronym you know.
The acronyms were successfully identified by the three (3) tables and it was pointed out that PCCD was in fact an error and should instead read PCDD.
3. What is your country experience on NIPs?
Antigua and St. Lucia stated that they are in the planning stages to conduct work on the new POPs. St. Lucia also stated that work on new POPs were not included in their updated chemical profile due to limited time for consultancy as well as a lack of expertise to deal with NIPs, hence the importance of this workshop to take back technical knowledge. St. Vincent mentioned that they are currently working on the first submission of the NIP and this should be completed by the end of 2014 (ongoing work under SAICM project). Belize and Suriname have completed works on the initial NIP for POPs but works still need to be carried out for new POPs. Dominica stated that their initial NIP was completed and this was the basis of their environmental laws. They currently have an environmental bill which includes the Stockholm Convention but no further information is available to date. Trinidad and Tobago has completed the initial NIP in 2013 but the document has not been officially submitted as it has to be endorsed by Cabinet and only include the initial POPs. St. Kitts stated that an initial NIP was done but was very challenging due to lack of resources and there is still a lot more work to be completed.
Ms. Alvarez (BRS Secretariat) mentioned that the purpose of the exercise is to have a proper understanding as to where countries are in terms of their NIPs in order to provide training. All presentations will be provided at the end of the workshop.

Comments and Questions

- Mr. D’Auvergne (St. Lucia) asked if countries can make specific exemptions. Ms. Alvarez (BRS Secretariat) explained that exemptions are based on a country’s request. She gave the example

of hexabromocyclododecane (HBCD), stating that a group from the European Union (EU) submitted a notification which is binding as they are a Party as a group. However, the Caribbean sub-region cannot submit such a notification as each country is considered a Party and the notification must be submitted by the individual country. Ms. Alvarez (BRS Secretariat) then stated that it is important to submit notification so the rest of countries would be aware of the need of a specific chemical.

- Mr. Wilson (St. Vincent and the Grenadines) questioned why certain chemical use is still being allowed if alternatives exist, using the example of dichlorodiphenyltrichloroethane (DDT) and if the possible reason may be cost and availability. Ms. Alvarez (BRS Secretariat) stated that the use is only allowed for specific situations. She used the example of DDT, saying that World Health Organisation (WHO) still promotes the use of DDT in certain countries as it is cheap, easy to use and some countries are still in need of DDT. She also stated that it is difficult to change culture and processes hence DDT is still used for vector control only, since there is a greater need for the chemical but can only be used specifically for vector control. Currently, a complete evaluation of alternatives is being assessed by an expert group on DDT, inclusive of Trinidad and Tobago, Panama and Paraguay.

Presentation II “Understanding the POPs listed after the entry into force of the Stockholm Convention” by Ms. Jacqueline Alvarez (BRS Secretariat).

This presentation gave an overview of the Stockholm Convention and discussed the new POPs added to the Convention after it came into force. Each new POP was reviewed, discussing past and present uses, availability of alternatives and its status under the Stockholm Convention. Industrial POPs were assessed, inclusive of the production, use and waste management of certain congeners contained in commercial bromodiphenyl ethers. POPs produced from unintentional production were also targeted for discussion.

Pictures of everyday use items containing POPs were shown and the participants were asked to identify and discuss the POPs contained in the items. Ms. Alvarez (BRS Secretariat) spoke on the pesticides issue which is prevalent in most countries stating an important issue is how countries purchase chemicals. That was the case with DDT in some countries where the chemical was bought in bulk and not used.

Comments and Questions

- Ms. Alvarez (BRS Secretariat) asked what are common in all the pictures shown. The participants agreed that the products all contain POPs. Ms. Alvarez (BRS Secretariat) then pointed out that the products are also used by everyone on a daily basis.
- Ms. Alvarez (BRS Secretariat) stated that the Stockholm Convention only lists certain congeners of PBDEs at the moment and those should be the focus under the Convention.
- Ms. Jude (St. Lucia) asked about perfluorooctane sulfonate (PFOS) content and other chemicals used in cosmetics and the availability of information. Mr. Weber (POPs Consultant) stated that research is still ongoing and at the moment it is difficult to get data. He gave the example of firefighting foams, stating that to date it is still unclear as to the quantities of PFOS used. He

assured the participants that PFOS is not used in cosmetics due to stringent cosmetic regulations in Europe. He recommended that all countries need to look at their cosmetic regulation to prevent women from the exposure of these chemicals.

- Ms. Alvarez (BRS Secretariat) stated that when PFOS was listed there were no talks on labelling, unlike hexabromocyclododecane (HBCD), where it was noted that it may be impossible to trace in Articles and the issue of labelling was put forward. She also mentioned that PFOS is difficult to assess in products unless you do analysis which may not be feasible and it makes more sense to have labels saying 'NO PFOS'. This was done with cleaning agents in Europe.
- Ms. Norde (Antigua) asked about the issue of monitoring companies who make cosmetics. Who has the responsibility to ensure that the ingredients on the labels are valid? She also mentioned that the use of a specific ingredient can lead to price increases which can have social repercussions. Mr. Weber (POPs consultant) stated that when PFOS was listed, research committees started screening products. He mentioned that over a dozen research groups currently look at fluorinated products. In addition, he stated that industries have noted the potential negative impact of fluorinated products and are currently phasing them out. He also mentioned that the US EPA started the phasing out of PFOS in 2011.
- Ms. Alvarez (BRS Secretariat) gave an example of polychlorinated biphenyls (PCBs) in Argentina, stating that PCBs were shipped to Argentina in radiators and sold cheaply as another country wanted to get rid of their waste. However, Customs Department in Argentina realised due to their risk assessment process and the radiators were returned to their country of origin. She mentioned that PFOS is still used but the quantities are small and each country needs to find the right strategy to eliminate its use.
- Dr. Khan (BCRC-Caribbean) questioned the use of polystyrene in the manufacture of disposable cups, plates, boxes used for food in the Caribbean, as in Trinidad and Tobago the manufacturers claim that they recycle polystyrene into the production stream. He also stated that Customs Department are not always aware of the additives used for the extrusion or expansion of the polystyrene material imported and questioned if these materials are regulated in other Caribbean Countries to prevent the production and release of HBCD. Ms. Alvarez (BRS Secretariat) then stated that the Convention allows countries to be in or out. She gave the example of the European Union, whereby they opted not to be bound under the Stockholm Convention for a year as they cannot meet the obligations under the Convention for HBCD and need to decide how to move forward in terms of finances and resources. Dr. Weber (POPs Consultant) stated that a simple screening test for bromides in polystyrenes (can screen up to 10ppm) can be conducted using the IA-Mass analytical instrument. He mentioned that this test can also determine heavy metal levels. He also pointed out that UNIDO gives developing countries the opportunity to buy the equipment necessary for the screening and suggested that this can be done by the BCRC-Caribbean. Ms. Alvarez (BRS Secretariat) stated that the bromide test is a 'yes' or 'no' test. Dr. Khan (BCRC-Caribbean) mentioned that polystyrene resins imported are used for multiple uses besides the manufacture of cups, plates, glasses etc. and these products are exported to the Caribbean and Belize.

- Ms. Roopnarine (BCRC-Caribbean) asked about the release of HBCD from insulation boards. Dr. Weber (POPs Consultant) stated most of the release of HBCD comes from textiles and only very small amounts from polystyrene. He also stated that research is still ongoing and temperature is a critical factor for release. Ms. Alvarez (BRS Secretariat) continued by stating that when HBCD was listed under the Convention there was sufficient evidence but research is still ongoing to fully understand details on the chemical. She stated that the best option is to avoid use of products containing the chemical, as this is always the first line of defence.
- Ms. Van Sauers Muller (Suriname) asked about the use of PFOS in Murex for the control of ants in Suriname. Ms. Alvarez (BRS Secretariat) stated that no other countries besides Brazil and China use PFOS for controlling ant populations and stated that she can provide further information on the matter.

Presentation III “Addressing uPOPs” by Dr. Roland Weber (POPs Consultant).

This presentation was divided into three (3) sections as follows:

Presentation III-a: PCDD/PCDF - Basic Information on Toxicity, Exposure and Reservoirs

This presentation focused on the old POPs, mainly dioxins and furans, in particular toxicity, exposure and reservoirs. The need for the elimination of PCDD/PCDF was highlighted based on toxicity values and potential effects and toxic equivalents. The presentation also focused on the life cycle of dioxins and furans with emphasis being placed on understanding the importance of the history of an area in order to manage these chemicals. Case studies were shown to illustrate the toxic equivalents for PCDD/PCDF and PCBs in breast milk and concentration levels in a Swiss lake. An example was given for Suriname explaining dioxin contamination in the soils of former rice fields but over the last twenty (20) years the usage of the fields has changed. The land use is currently for agricultural uses in particular cattle grazing.

The life cycle of these chemicals were discussed relating to background human exposure in foods, bioaccumulation and biomagnification in the food chain. A case study was discussed for solid waste dumped by the Basel Chemical Industries illustrating the high cost of remediation. Emerging POPs such as brominated flame retardants, PCBs and fluorinated POPs in consumer products, chlorinated paraffins and softener in polyvinyl chloride (PVC) and other plastics as well as phthalates in waste flow were discussed.

Comments and Questions

- Ms. Norde (Antigua) stated that the statistics on PCDD/PCDF and PCBs were very interesting but no Caribbean countries were included in the study and it was assumed that fish may not contain as much pollutant. Dr. Weber (POPs Consultant) replied by saying that to really contaminate the ocean you will need a large source of dioxins and as you move into open waters the levels of contaminants are quite low. He used the example of the Baltic Sea, stating that it is a shallow sea and due to industrial activity from Russia and Germany, levels of dioxins were high and hence fish couldn’t be sold but as you moved into the open sea the levels were much lower. The same occurred in Sydney Bay, Australia. He stated that he is not aware of any scientific

publication that states differently. He stated that with rivers, the contaminant levels all depends on the history of the river. Dr. Weber (POPs Consultant) also suggested that a regional project would be useful to estimate levels of these contaminants. Mr. D’Auvergne (St. Lucia) agreed, saying that this kind of data will be valuable but was never collected as there were never any justifications to collect this type of statistics in the Caribbean.

- Mr. Wilson (St. Vincent) asked about the use of a savannah for cattle rearing, given that the area was previously used for dumping PCBs. Dr. Weber (POPs Consultant) stated that it is problematic and proper site assessment should be done to ensure the area for cattle rearing is not contaminated. He then gave an example of the Philippines where an old landfill site was used as a pig and chicken farm which resulted in negative health and environmental impact, hence emphasising the need for proper land planning.
- Ms. Alvarez (BRS Secretariat) commented that under the Stockholm Convention contaminated sites need to be identified, but that is not enough as there is a need to go forward and classify contaminated sites and decide on the uses of these areas. If the area is contaminated then it may not be usable until remediation has been done to prevent potential exposure and risks.
- Ms. Norde (Antigua) spoke on the problem of roaming animals in Caribbean countries, hence the issue of cross contamination. She asked about the potential dangers of these chemicals to humans and the treatability of potential contamination in humans. Dr. Webber emphasized the need for proper planning to reduce the risk of cross contamination.
- Ms. Alvarez (BRS Secretariat) then mentioned an issue of remediation of krypton in Switzerland and lead contamination in Uruguay from the metal industries. In Uruguay there is the issue of health of children as well as cost of remediation. This has led to strain on tax payers and Government hence the need for social economic assessment as outlined in the NIPs. She stated that it is also important to sell these ideas to funding agencies to ensure that there is a movement towards the prevention of contaminants to the environment.

Presentation III-b: “Stockholm Convention on Persistent Organic Pollutants - Controlling PCDD/PCDF and other unintentional produced POP“

This presentation began with an overview of the unintentional POPs listed in the Stockholm Convention and approaches and activities to control unintentional POPs , relating to global action towards risk reduction of POPs. For developing countries or countries in transition, it was mentioned that an integrated approach for chemical management is needed for the elimination or restriction of POPs and waste management should be linked directly to industrial emissions to continually minimize and eventually eliminate the uPOPs produced. The priority sectors releasing uPOPs were discussed as well as the use of best available technique (BAT) and best environmental practice (BEP) guidelines outlined under the Stockholm Convention for the prevention and minimisation of the production of uPOPs. The timetable for best available technique/best environmental practice (BAT/BEP) for PCDD/PCDF was outlined which included the establishment of a NIP within 2 years after entry into force of the Convention for the respective countries, a review of the strategies in the action plan to achieve the goals every 5 years and phase-in the requirements of BAT identified for new sources as soon as possible but not later than 4 years after entry into force.

Comments and Questions

- Mr. D’Auvergne (St. Lucia) asked if there are any issues with dioxins from the burning of used tyres. Dr. Weber (POPs Consultant) stated that the major contaminant from burning tyres is the release of polyaromatic hydrocarbons (PAHs). He mentioned that dioxin levels are low as tyres don’t have a lot of chlorine.
- Mr. D’Auvergne (St. Lucia) emphasised that used tyre burning is a huge issue within the Caribbean region, with large stockpiles located throughout the countries. Dr. Weber (POPs Consultant) stated that in Europe, used tyres go to the cement industry to be used in kilns since the tyres have increased iron levels and are high in calories. He mentioned that he has a presentation of tyre management and this can be shared with interested persons.
- Mr. Wilson (St. Vincent and the Grenadines) suggested that Trinidad assist the smaller islands in managing their used tyres. Dr. Weber (POPs Consultant) acknowledged the idea of co-processing used tyres throughout the Caribbean region.
- Dr. Weber (POPs Consultant) stated that countries need to discuss the BAT/BEP techniques with their governments as they roll out their action plans under the Stockholm Convention. Ms. Alvarez (BRS Secretariat) clarified that the timeframe for the action plan is five years but the NIPs need to be updated as needed when changes are made in the respective countries.
- Ms. Roopnarine (BCRC-Caribbean) commented that an inventory at a regional level would be fantastic as this would furnish the NIPs update. She also stated that there is a need for an integrated inventory for the Caribbean region as there is a lack of resources hence incomplete data sets and unfinished inventories. The need to consolidate data to a proper inventory was stressed.
- Dr. Weber (POPs Consultant) stated that UNITAR gives support to pollutant release and transfer registers (PRTR) study and confirmed that training is available. Ms. Alvarez (BRS Secretariat) stated that UNEP under the GEF scheme also provides support for PRTR projects, giving the example of Chile. Ms. Terekhova (BRS Secretariat) mentioned that there is one global PRTR project executed by UNITAR and implemented by UNEP. She mentioned that the second phase is currently in the planning stage but no Caribbean countries are involved. It was also mentioned that the Central American Mission gives support to countries involved in the PRTR.
- Ms. Terekhova (BRS Secretariat) stated that for Europe the PRTR is a legal binding protocol and the EU model involves 84 pollutants. The American model had a different methodology but the end results are basically the same.
- Ms. Roopnarine (BCRC-Caribbean) noted that the PRTR is a very interesting concept and can be utilized in the Caribbean region to create a database for chemical pollutants.
- Mr. D’Auvergne (St. Lucia) stated that although the PRTR will be very useful there is the issue of timing. He continued by saying that under the different Conventions there are different reporting obligations and requirements hence in order to ensure comprehensive reporting sufficient time is necessary. Mr. D’Auvergne (St. Lucia) said that detailed reporting may have a time lag for submissions. Ms. Alvarez (BRS Secretariat) agreed stating that different reporting deadlines for the different Conventions cause this problem. She also said that although this may

be the case, the information collected will be available in a data, creating an automated system to retrieve information when needed.

Presentation III-c: “Updating the Inventory on Unintentional POPs (With new Toolkit for Dioxin and Furans)”

This brief presentation outlined the methodology to establish comparable PCDD/PCDF inventories with the UNEP dioxin toolkit and explains a five step approach for the establishment for a PCDD/PCDF inventory. The main modifications of the 2013 toolkit were explained and some examples of updating and revising inventories were shown.

Comments and Questions

- Dr. Weber (POPs Consultant) asked how many countries in the Caribbean have waste incinerators. Belize and Antigua stated that they have medical waste incinerators whilst Trinidad said that besides the medical waste incinerator, there is also an incineration for the steel production processing.
- Ms. Jude (St. Lucia) asked if there is a tool that exists to rapidly identify hotspot for dioxins. Dr. Webber (POPs Consultant) explained that there is a chapter dedicated for the identification of hotspots in the guidance document from UNIDO and World Bank. The same is also available for PCBs.
- Mr. Wilson (St. Vincent and the Grenadines) stated that PAHO has an initiative on ‘smart hospitals/health centres’ where all practices are environmentally friendly and stated that since this project was commissioned it has been successful. Dr. Weber (POPs Consultant) stated that he compiles best practices studies and it would be useful to collect this information in order to share with other countries.
- Mr. D’Auvergne (St. Lucia) asked about the time frame for dioxins and furans to persist in the atmosphere during combustion before they settle, and is it an air or land issue. He stated the importance of his question by informing that St. Lucia is currently updating their State of the Environment report focusing on air pollutants. Dr. Weber (POPs Consultant) stated that it is a land issue and using PCBs as an example, he stated that the chemical can become volatile and persist in the atmosphere. He also stated that in the soil, these chemicals can be persistent for decades or centuries, hence eventually becoming a land issue.
- Mr. D’Auvergne (St. Lucia) asked if there is the possibility for short term exposure from inhalation of dioxins and furans to workers. Dr. Weber (POPs Consultant) pointed out that approximately 90% contamination comes from food intake. However, if workers are in an area with poorly functioning incinerators levels can be high, as evident with Japan.
- Ms. Thomas (Dominica) asked if the toolkit can be used to do an inventory for any other chemicals. Dr. Weber (POPs Consultant) mentioned that it is specific for unintentional POPs and different toolkits for other POPs (PBDEs and PFOS) will be discussed later on during the workshop. Ms. Alvarez (BRS Secretariat) stated that different types of inventories have different toolkits and the dioxins toolkit uses emission factors for the inventory and the other inventories

uses different methodologies. She gave the example that brominated and fluorinated compounds use similar toolkits whilst PCBs is different.

- Ms. Thomas (Dominica) asked how the POPs chemicals traded are dealt with in the inventory. In particular, she asked if all the chemicals imported to Dominica will be considered consumption given that nothing is manufactured in country. Dr. Weber (POPs Consultant) explained that for new POPs there is a Customs guideline developed and for countries not manufacturing, this can be used as their first line of defence at the border in order to regulate imports, hence manage the chemicals. Ms. Thomas (Dominica) then clarified her question by asking how chemicals traded would be considered in the inventory in terms of reporting. Dr. Weber (POPs Consultant) stated that in the guidance document you have imports, use and end of life, hence these must be quantified separately without duplications. Ms. Alvarez (BRS Secretariat) stated that once Articles crosses the border it is the country's responsibility to undertake decisions on whether the product should enter the country, thus the importance of Customs control.
- Dr. Weber (POPs Consultant) then mentioned that the toolkit has five main vectors which include air, water, land products and residues (ashes), with air and residue being the most important.

Working Group Exercise 1- Updating and Revising PCDD/PCDF Inventories

This exercise gave an overview of the use of the toolkit for the identification and quantification of releases of dioxins, furans and other unintentional POPs. The exercises involved the calculation of emission factors based on three scenarios. The toolkit can be accessed at <http://toolkit.pops.int>

Ms. Alvarez (BRS Secretariat) worked together with the groups ensuring that the analysis was correct and the participants fully understood the exercises and the outcomes generated.

Comments and Questions

- Mr. Wilson (St. Vincent and the Grenadines) questioned the use of data from one incinerator to extrapolate estimated emission values. Dr. Weber (POPs Consultant) stated that this may be possible if there are many incinerators as the case with China (over 10 000 incinerators) but where there are few incinerators this data may not be representative. Mr. Wilson (St. Vincent and the Grenadines) then asked if the data collected from other countries with similar characteristics and conditions can be used as a measure against first time data collected. Dr. Weber (POPs Consultant) said where settings are similar the data can be used as a benchmark. Ms. Alvarez (BRS Secretariat) mentioned that it is important to look at the assessments that others made but this must be done very carefully. She gave the example of forest fires stating that it is difficult to calculate the biomass burnt as this is dependent on the assessor. Dr. Weber (POPs Consultant) mentioned further that UNEP is calculating a per capita level of emissions that can be used as an average and first guess for an initial study.
- Ms. Terekhova (BRS Secretariat) spoke on the effectiveness of the affiliation of the Stockholm Convention and addressed an earlier question on the Caribbean's participation in projects under the Convention. She stated that in 2009/2010 Antigua, Jamaica and Barbados were involved in a

GEF project on global monitoring plans, a SAICM project on the estimation of POPs emissions included Haiti, Barbados and Bahamas and in 2009 Antigua was part of a global monitoring plan project for POPs emissions. She reiterated that activities are ongoing in the Caribbean region.

Ms. Terekhova (BRS Secretariat) wrapped up the proceedings for the first day and evaluation forms were completed for the day.

DAY 2 PROCEEDING

Dr. Khan welcomed everyone to the second day of the workshop and the workshop proceedings continued.

Session 2: Addressing PBDEs – POPs Waste Management

Presentation I: “Understanding the listed PBDEs” by Dr. Roland Weber (POPs Consultant)

Polybromodiphenyl ethers (PBDEs) were defined explaining the different degrees of bromination, and the distribution of POP-PBDEs in commercial PBDE mixtures was discussed. The obligations of POP-PBDEs under the Stockholm Convention was explained stating that the Convention prohibits the use of POP-PBDEs but contains a time-limited exemption for the recycling of articles that may contain PBDEs and the use and final disposal of articles manufactured from such recycling.

The production and use history of the different types of brominated flame retardants were illustrated and the material flows of these PBDEs were addressed. A study carried out in China showed levels of brominated flame retardants in children toys in the ppm range. Another study done in Czech Republic demonstrated that coffee cups contained brominated flame retardants. The extent of PBDEs contamination around the world was exemplified. This included examples of e-waste recycling using primitive techniques in east and south east Asia, global comparison of PBDEs in human milk, total toxicity of contaminant mixtures from e-waste treatment and material flow and stocks of WEEE plastic in Nigeria. The potential risks to human and the environment from the recycling of PBDEs as well as proper waste management were also discussed.

Comments and Questions

- Ms. Roland (St. Kitts) questioned if the foam used in the construction industry is the same foam that comes in containers that is sprayed and then it expands. Dr. Weber (POPs Consultant) confirmed that it is the same and added that this rigid foam has been used until 2004 and to date no studies currently assessing its levels of PBDEs, with the exception of Switzerland who indicated that there are in fact PBDEs in the type of foam.
- Ms. Alveraz (BRS Secretariat) asked about recycling practices in the Caribbean. Ms. Gardiner (Trinidad and Tobago) stated that Trinidad and Tobago recycles plastics, in particular beverage containers and it's mainly done by a single company. She stated that Trinidad and Tobago also

recycles e-waste and this is done by a few companies. E-waste that cannot be recycled in Trinidad is shipped abroad to be recycled.

- Mr. D’Auvergne (St. Lucia) mentioned that about 3-4 years ago a Caribbean country was using fertilizers made from human waste. He questioned the amount of decontamination done before the waste was used as fertilizer. Dr. Weber (POPs Consultant) stated that the pollutants are not from the human sewage but in fact coming from washing machines where chemicals from the textiles are washed off, or from the recycling industry reusing wastewater. Mr. D’Auvergne (St. Lucia) then stated that human waste contains high levels of heavy metals but more importantly it is assumed that the industrial waste is separated from the commercial waste and treated but in some countries this does not occur. Dr. Weber (POPs Consultant) stated a possible means of solving this issue is at the governmental level when writing policies. He mentioned that it is important to look at industries and identify heavy metals released and ensure the metals are treated before sewerage can be used as fertilizers.
- Ms. Norde (Antigua) expressed interest on the issue of oven burning. She said there is a lack of ash management and in some countries garbage inclusive of old furniture, carpet, clothes and used computers is burnt at private properties and the ashes are left. Dr. Weber (POPs Consultant) stated that many countries such as China, India and Philippines do open burning and there is a need to educate people on this issue.
- Mr. D’Auvergne (St. Lucia) asked how you sensitise the public since there are numerous different types of products containing many different chemicals, without bombarding the public with excessive amounts of technical information. He also asked what are the best practices used by other countries to sensitise the public. He mentioned that the Caribbean is way behind in terms of public awareness of chemicals. Dr. Weber (POPs Consultant) stated that the POPs identified under the Stockholm Convention is a good starting point for informing the public on hazardous chemicals related issues. He suggested using examples via short films to illustrate how chemicals bioaccumulate and are biomagnified through the food chain, in an effort to stimulate the public’s thinking. He also mentioned that in Germany, there is a phone application where customers can scan barcodes of products and dangerous ingredients would be highlighted to make the consumers aware.
- Mr. D’Auvergne (St. Lucia) spoke on the issues of standards in terms of quantities of chemicals used in products locally, as compared to the same product exported. He stated that Government need to set a single standard across the board. He also mentioned that for genetically modified foods there are no standards for the Caribbean hence the population is vulnerable. Ms. Alvarez (BRS Secretariat) noted that it is important to ensure that ashes management is a cooperative arrangement between Government and the public and the prerogative of the Government is to put policies in place for the public to follow, hence translating plans into concrete actions. Dr. Weber (POPs Consultant) said there is a need to keep abreast on what the European Union is doing and this can be used as a guide for the Caribbean.

Presentation II: “POPs-PBDEs Inventories” by Ms. Jacqueline Alvarez (BRS Secretariat)

Ms. Alvarez (BRS Secretariat) noted the importance of the guidance document and the understanding of the methodologies involved. She stated that the presentation will highlight two high priority areas for PBDEs contamination: the transport sector and waste of electrical and electronic equipment (WEEE).

This presentation began with an overview of the POPs-PBDEs listed under the Stockholm Convention in 2009, identifying the status with regards to production and use of these chemicals as well as recycling and recovery. The need for a POPs-PBDE inventory was highlighted and reference was made to the use of the POPs-PBDE inventory guidelines. The guideline can be used to identify/quantify articles containing POP-PBDEs in import/export, use, stockpiles, recycling and wastes, to estimate missing information required to complete the inventory and to give information for prioritization in POP-PBDE action plan.

The content/structure of the POPs-PBDE inventory guidelines was described including a detailed explanation of the methodology for carrying out an inventory using a stepped approach. Examples on the use of the guidelines for PBDEs in plastics as well as from the transport sector were shown to ensure that participants had a thorough understanding of the methodologies involved.

The uses of POPs-PBDEs and the fate of these contaminants from contaminated sites were discussed together with the procedure for managing and evaluating data, and preparing the inventory report. A case study using the transport sector was also done on collecting and compiling data as well as calculating the quantity of Pops-PBDE generated

Comments and Questions

- Ms. Alvarez (BRS Secretariat) asked if POPs-PBDEs are allowed or not allowed for use under the Stockholm Convention. The participants agreed that POPs-PBDEs are not allowed for use.
- Ms. Alvarez (BRS Secretariat) asked if POPs-PBDEs already in Articles are allowed or not allowed for use under the Stockholm Convention. The participants stated that POPs-PBDEs are allowed for use and can be recycled.
- Ms. Alvarez (BRS Secretariat) asked if the recovery of POPs-PBDEs in Articles is allowed or not and if there are any exemptions. It was agreed that recovery is not allowed and recycling is exempted with the exception of PBDEs in products already in use. Ms. Alvarez (BRS Secretariat) stated that as you recycle PBDEs, the quantities are reduced.
- Ms. Alvarez (BRS Secretariat) explained that an inventory serves as statistical data and pictures that can be used to create a description of the existing situation of POP-PBDEs and used for priority settings. For example, in Europe, priority is given to PBDEs in end of life vehicles as compared to the transport sector.
- Dr. Khan (BCRC-Caribbean) asked the participants about their cut-off date for importing foreign used vehicles, stating that 2004 was the last year for PBDEs to be used in materials. He gave the example of Trinidad, explaining that the importation of vehicles over six years is prohibited. Ms. Norde (Antigua) stated that in Antigua you are not allowed to import a used vehicle over five years. Mr. D’Auvergne (St. Lucia) said that there is no total ban on importing used vehicles to St. Lucia, but instead there are very high tariffs on old vehicles. Ms. Alvarez (BRS Secretariat) asked how long you are allowed to keep the vehicle. . Mr. D’Auvergne (St. Lucia) responded by stating

until the end of life of the vehicle as there is no Ministry of Transport Test (MOT) or emission testing. Additionally, he stated that the vehicles are Japanese built and the quality is very good so there is no need to change vehicle until its end of life. Mr. Belle (St. Kitts and Nevis) had similarities with St. Lucia with respect to import of foreign used vehicles.

- Ms. Alvarez (BRS Secretariat) questioned the disposal of vehicles. The general consensus of the participants was it may either become scrap metal or exported to other countries.
- Dr. Weber (POPs Consultant) stated that data on consumer products are sufficient and there is no need for import statistics, but it is paramount to understand the data for the inventory. Ms. Alvarez (BRS Secretariat) said that it is sometimes useful to check if the information from the statistical office and Customs are the same to ensure the data is thrust worthy and this also provides an opportunity to determine if there is a need for legislation.

Working Group – Exercise II

This exercise involved using the approaches set out in the guidance documents and the tools provided in the guidance to calculate the quantity of POPs-PBDEs generated from vehicles and to discuss the following:

1. How would you address the end of life vehicles? Is this a problem at your country?
2. Where would you look for the information?
3. What type of assumptions do you expect to make?

Dr. Weber (POPs Consultant) pointed out a mistake in the guidance document. The document asks to calculate PBDEs, but total polymers should be calculated and not PBDEs alone. The calculation table needs to address total volume of polymer to PBDEs ratio. Dr. Weber (POPs Consultant) then explained the scenario for the working group exercise and asked the participants to determine if there is a need for end of life management of vehicles since developing countries use the vehicles until they are broken.

Ms. Alvarez (BRS Secretariat) mentioned that POPs-PBDE is complex and it is important to understand where they are found and how to deal with them. She stated that the guidance document provide a simple tool to aid in the management of POPs-PBDE. She also asked the groups about their discussions on sampling, analysis and the need for new legislation.

The groups presented on their responses to the above mentioned question. The responses are summarised as follows:

- Ms. Soetosenojo (Suriname) spoke on behalf of their table and stated their assumptions and stated that Ministries/Agencies need to record data as needed and this should be specific and done on a continuous basis.
- Mr. D’Auvergne (St. Lucia) from another table also stated their assumptions and made mention that police records, transport department, solid waste management, customs and statistical office should collect and cross reference data on a regular basis.

- Ms. Thomas (Dominica) represented the final Table, stated there assumptions for the questions and conveyed the same sentiments as the other tables.

Comments and Questions

- Ms. Norde (Antigua) raised the issue of derelict vehicles that are illegally disposed of on the roadside on private crown land as there is no space in landfill. She stated that attempts are made to find space at landfill but the main problem stems from the fact that the scrap metal from the vehicles are mixed with other waste on reaching the landfill sites and it is difficult to separate, hence almost impossible to keep a record of the quantities. She also mentioned that Antigua is in the process of creating capacity and improving legislation to deal with this issue.
- Ms. Jude (St.Lucia) queried the correct analysis for the working group exercise since the results generated was different due to different assumptions made by the different groups. Ms. Alvarez (BRS Secretariat) stated that assumptions are essential but not critical as there is need to understand the national situation in each country. She stated that management is the same as after the first inventory is done you have a value; the same occurs with the second inventory, hence there is no correct answer, but the priority lies in considering the issues raised. Ms. Alvarez stressed that it is most important to consider the procedure for the sound management of POPs-PBDE and stated that the implementing agencies are willing to assist as this is not a stand-alone project.

Presentation III: “Transboundary movements and environmentally sound management of e-waste” by Ms. Tatiana Terekhova (BRS Secretariat)

This presentation gave an overview of the Basel Convention, reviewing definitions and discussing amendments under the Convention. The hazardous substances and hazards associated with e-waste were explained and POPs in e-waste were identified. Transboundary movement under the Basel Convention was defined and the conditions to differentiate between e-waste and, electrical and electronic equipment (EEE) were described. The environmentally sound management (ESM) of e-waste was highlighted with reference made to the mobile phone partnership initiative (MPPI) guidelines and the partnership for action on computing equipment (PACE) guidelines.

Comments and Questions

- Ms. Terekhova (BRS Secretariat) gave the example that Ghana’s collection rate for e-waste is approximately 90% and then asked the countries about e-waste collection in the Caribbean. Suriname and Dominica stated that e-waste goes into regular trash which goes to landfill where scavengers at the landfill sites burn and remove the metal. St. Lucia echoed the same sentiments as Suriname, where all e-waste goes to landfill and there is no true recycling system. However, St. Lucia has a procedure where volunteers go to the landfill sites and take the recyclable materials (informal collectors). Trinidad and Tobago also stated that some companies voluntarily send e-waste to e-waste brokers and this waste is shipped abroad for recycling. E-waste collected from households in Trinidad however, goes directly

- to landfill with other wastes. The same occurs in Antigua; e-waste is not separated and goes directly to landfill. St. Vincent and the Grenadines was the only county that had any type of system in place for e-waste. The e-waste is collected on certain days and goes to a designated area in the landfill which decreases open burning on the islands.
- Trinidad and Tobago mentioned further that the solid waste company of Trinidad and Tobago collects large white goods which are carried to a specific area at the landfill and buried.
 - Ms. Terekhova (BRS Secretariat) mentioned that there are e-waste brokers in Europe that sell e-waste, and they take the responsibility to ensure the waste is managed in an environmentally sound manner.
 - Ms. Terekhova (BRS Secretariat) stated that in Europe big companies are responsible for their end of life product, for example, IBM which takes responsibility and works with recycling companies. She asked if companies in the Caribbean take the responsibility of collecting and recycling their products. Ms. Roopnarine (BCRC-Caribbean) stated that there are no recycling companies for e-waste and no formalised system for collection in the Caribbean.
 - Mr. Wilson (St. Vincent and the Grenadines) spoke of the issue of logistics in terms of infrastructure for e-waste recycling and the lack of commitment by big companies to take the responsibility for their product. Examples were given where a shipment of perishable food products passed its expiration date, the products coated with food dye and then relabelled for sale, as well as old computers and medical equipment being sent to the Caribbean as 'gifts'. Mr. Wilson (St. Vincent and the Grenadines) stated that lack of national legislation as it relates to international convention is the main cause of such happenings.
 - Ms. Terekhova (BRS Secretariat) asked if there were any situation in which goods were sent back on reaching the port of entry in the respective Caribbean country. Mr. Wilson (St. Vincent and the Grenadines) stated that a chemical shipment not labelled in English was not allowed to be off loaded in St. Vincent. Ms. Garnier (Trinidad and Tobago) said a shipment of goods to Trinidad with no prior notification in place was sent back to the country of origin. Ms. Terekhova (BRS Secretariat) then mentioned that the BRS Conventions Secretariat is currently in the process of developing guidelines for a 'take back' procedure for products.
 - Ms. Terekhova (BRS Secretariat) asked if aluminium and copper is recycled in the Caribbean as well as any other types of materials. Suriname stated that both plastics and metals are collected and shipped abroad for recycling. Ms. Terekhova then mentioned that there are only a few facilities worldwide with the capacity to properly recycle metals and she stated that it is very important to optimize recycling.

Presentation IV: "POPs Management in the Caribbean" by Ms. Camille Roopnarine (Consultant, BCRC-Caribbean)

This presentation provided some background information on the Stockholm Convention and the progress of the National Implementation Plans for the Caribbean sub-region, with reference to the GEF project. The current status of POPs management and chemical management practices in nine different

Caribbean islands were summarised. Unintentional POPs production was discussed in relation to the Organization of Eastern Caribbean States (OECS) solid and ship-generated waste management project and contaminated sites were highlighted in the Caribbean. The initiatives for PCBs management and disposal in the Caribbean region including PCBs inventories were discussed together with the development and implementation of a sustainable management mechanism for POPs in the Caribbean.

Comments and Questions

- Mr. D’Auvergne (St. Lucia) stated the importance of a public education drive to reduce the levels of POPs due to the health and environmental risks associated with these chemicals. Ms. Roopnarine (Consultant, BCRC-Caribbean) agreed, adding that the target audience would be varied, ranging from politicians to Customs and hence there is a need for different educational campaigns. Mr. D’Auvergne (St. Lucia) continued by saying that the target audience needs to be carefully selected and there is an urgent need to inform the public on the risks associated with POPs.
- Mr. Wilson (St. Vincent and the Grenadines) mentioned that WHO/PAHO focuses on public education and this can be used as an avenue for funding. Ms. Roopnarine (Consultant, BCRC-Caribbean) stated there is a need to look at the economics of scale and have a general approach for awareness programmes since the budget is limited.
- Ms. Alvarez (BRS Secretariat) asked how ambitious is the awareness project with respect to the money requested. Ms. Roopnarine (Consultant, BCRC-Caribbean) quoted approximately 26million US dollars with 9million US dollars from GEF and the rest in kind and cash from private companies.

Presentation V: “Environmentally Sound Management (ESM) of industrial (new listed) POPs” by Dr. Weber (POPs Consultant)

This presentation begins with the definition of EMS followed by the general guidelines for EMS adopted by the Organisation for Economic Co-operation and Development (OECD). The Basel Convention general technical guideline for ESM on POPs waste (PBDE and PFOS) was discussed and included general considerations, legislative and regulatory framework, waste prevention and minimization, identification and inventories, sampling, analysis and monitoring, and handling, collection, packaging, labelling, transportation and storage. The ESM of new PPOs throughout their life cycle stages was explained, giving an example of the material flow and stocks of WEEE plastic in Nigeria.

Dr. Weber then spoke about the allowances for recycling of POP-PBDE/PFOS and the need of BAT/BEP guidance, showing the material flow of POP-PBDE-containing goods in line with the structure of the BAT/BEP guidance. The importance to separate POP-PBDEs containing materials was emphasised, as recommended by the COP5. Specific BAT/BEP for POP-PBDE/BFR containing polymers in WEEE and end of life vehicles as well as specific BAT/BEP for POP-PBDE/BFR materials in the transport sector were discussed. Energy/material recovery from POP-PBDE containing materials and the disposal of POP-PBDEs containing materials to landfills were explained. Issues relating to developing countries in terms of lack of data were highlighted with a request to encourage countries to get involved.

The importance of ESM of the transboundary movement of PBDE/HBCD/PFOS in stocks and wastes was discussed taking into consideration the use of alternatives. An example of PFOS was captured illustrating its life cycle management. It was noted that the draft of the Basel Convention does not have a section on PFOS contaminated sites but the Stockholm Convention inventory guidelines has a chapter on PFOS contaminated sites giving initial guidance on finding PFOS contaminate sites.

Comments and Questions

- Ms. Jude (St.Lucia) stated that there is limited data available from developing countries and asked about whether the developed countries go to developing countries to collect data and identify their needs when putting together the guidance document. Dr. Weber (POPs Consultant) stated that he would be happy to look at the guidance to improve the text. He stated that the Basel Convention is an open ended working group and the same applies for the Stockholm Convention and this can assist in identifying what can be done in developing countries to improve the guidance document.
- Ms. Jonelle Jones (BCRC-Caribbean) queried that groups that actually develop guidelines are normally dominated by developed countries. Ms. Alvarez (BRS Secretariat) mentioned that it is up to each country to get involved in the working groups. She stated that there are small inter-sessional groups are not very populated and these groups are open to all countries with meetings being conducted via teleconference. It was also acknowledged that time difference with different countries pose a problem for these meetings.

Presentation VI: “Environmentally Sound Management of POPs Pesticide Waste” by Dr. Weber (POPs Consultant)

This presentation focused on the environmentally sound management of POPs pesticide waste. ESM of POPs pesticides exempted were discussed in order to prevent the accumulation of obsolete pesticide stocks. Examples were given of developing countries containing obsolete stock. Reference was then made to the Food and Agriculture Organisation of the United Nations (FAO) guidance that deals with the ESM of obsolete stock of chemicals including the management of empty pesticide containers.

Lessons learnt from countries such as Romania on the management and disposal of obsolete pesticide stocks were assessed and the new listed POPs pesticides alternative approach as ESM technique was discussed. Working examples of the alternative approach for ESM was highlighted. These included alternatives to the use of chlordecone, sulfluramide and endosulphan. Issues surrounding the use of alternatives were also discussed.

Comments and Questions

- Dr. Weber (POPs Consultant) stated that the guidance document from the FAO for ESM of pesticides covers the entire life cycle for pesticides, inclusive of obsolete pesticides and recommends the use and implementation of this document. He stated that the guidelines also discuss the management of empty pesticides containers.

- Dr. Weber (POPs Consultant) asked if the Caribbean countries manage empty pesticides containers. Mr. Wilson (St. Vincent and the Grenadines) stated that St. Vincent abides by the Fairtrade system, hence farmers have a collection system in place. A collection date is announced and the Fairtrade Authority goes to different agricultural areas to collect empty containers. However, the containers still end up in the landfill with the hope that the farmers follow the ‘three rinse and punch’ practice before disposal. Prior to this, pesticide containers in St. Vincent were used for storage for water and wine. Dr. Weber (POPs Consultant) spoke on the high risk associated with the lack of proper management for the containers. He then gave an example where a cook at a school in India used the container to store water for cooking. This resulted in the death of 20 children.
- Dr. Weber (POPs Consultant) stated that a substitution approach can be used for the ESM of pesticides listed in the new POPs. An example was given where China had to find a substitute for chlordecone (pesticide use for cockroaches and rat). Sulfluramide was used as the substitute.
- Mr. Wilson (St. Vincent and the Grenadines) mentioned the need for testing, analysis and remedial work on contaminated sites in the Caribbean. He noted that in St. Vincent, in the past, there was a dumpsite located above an aquifer. He stated that after the Solid Waste Management Unit started the site was closed but then used in cattle rearing. He also predicted that if testing was done in the area the results would be alarming. Dr. Weber (POPs Consultant) suggested that he can organize research groups that may be interested in conducting the study. Ms. Alvarez (BRS Secretariat) mentioned that approximately two years ago a project was done of pesticides in the Caribbean Sea. The assessment illustrated the presence of DDT and other chemicals. She offered to look for the results of the project and pass on the information.

Ms. Alvarez (BRS Secretariat) wrapped up the proceedings for Day 2 by giving an overview of the issues faced by Caribbean countries and the need for countries to update their NIPs.

DAY 3 PROCEEDING

Session 3: Addressing perfluorooctane sulfonic acid (PFOS)

Presentation I: “Understanding PFOS and related substances” by Dr. Roland Weber (POPs Consultant)

This presentation began with an overview of PFOS and its related substances and their uses (acceptable purposes) as well as exemptions under the Stockholm Convention. The consumption of PFOS in Europe and the production in China, Germany and Italy were highlighted indicating a decline over the past decade.

Perfluorinated alkylated substances (PFAS), not addressed by the Convention, but used as substitutes were discussed showing their chemical structures. The bioaccumulation and potential human health risks associated with PFOS was emphasised, using the case study of PFOS/PFOA negative effect on semen quality in Denmark. The life cycles of PFOS and related substances were explained followed by a case study of the material/substance flow of PFOS in Switzerland.

Mention was made of the groundwater screening of PFOS/PFAS in Germany, PFOS/PFCs in landfill effluents, and PFOS/PFOA in rivers in Germany, PFOS/PFAS contamination in the North Sea as well as the oceans, temporal trend of PFOS/PFAS in stranded melon-headed whales in Japan and trends in exposure to PFOS/PFAS in United States. This data was used to highlight the need of guidance for Best Available Technology (BAT) and Best Environmental Practice (BEP) for the use of PFOS and related chemicals.

Comments and Questions

- Mr. D’Auvergne (St. Lucia) asked that although the effects of PFOS on humans and animals are known, how many studies were done on the interaction of different chemicals inclusive of PFOS on the human body. Dr. Weber (POPs Consultant) stated that this is difficult to assess and even with two to three chemicals the assessment is complicated. He also stated that bioassays measures the effects of oestrogen activation and this can be used to sum up the effects of different chemicals. He cited a study done in Denmark that analysed 15-20 chemicals in consumer products to determine chemical exposure in children. He stated that the chemical contents of the products were summed and exposure was calculated. He also noted that this was one only study of its kind done to date. Dr. Weber mentioned that even REACH Legislation (European legislation) assesses chemicals on an individual basis. He suggested that chemicals having the same effects should be assessed together, there is a need for regulatory framework to support the accumulative effects of chemicals, and awareness drives are imperative to ensure consumers are aware of the safe use of chemicals in products. Mr. D’Auvergne (St. Lucia) stated that the ‘safe use’ can be an issue as different chemicals are considered safe at different concentrations and when combined in the body the cumulative effect is unknown.

Presentation II: “Establishing Inventories for PFOS” by Dr. Roland Weber (POPs Consultant)

This presentation identified the objectives of the PFOS inventory and described in detail the methodology for use of the PFOS inventory guidance document. This included an overview of the structure of the PFOS inventory guidance and detailed information on conducting each step of the inventory. Some practical considerations for key areas of PFOS inventory development were then discussed. This included inventory and substance flow of PFOS in Switzerland, an inventory of PFOS use in electro plating, an inventory of stockpiles and wastes in Europe and an assessment of stocks/wastes inventory of PFOS in synthetic carpets in Germany. Potential sites contaminated with PFOS and related substances were discussed, using Dusseldorf, Germany as an example.

Comments and Questions

- Dr. Weber (POPs Consultant) stated that Germany has a national education programme set up to train firefighters on PFOS.
- Ms. Norde (Antigua) asked if there is the possibility of PFOS being present in cosmetics. She stated that in the Caribbean, people use a lot of skin lightening products and asked about the chemical profile of these products. Dr. Weber (POPs Consultant) indicated that he has information and will pass it on. He mentioned that there is the possibility that mercury may be

present in skin whitening products and stated that Europe has good legislation on chemicals prohibited in products; hence it can be used as a guide to determine which chemical may be hazardous.

- Ms. Jude (St. Lucia) questioned the use of PFOS in personal protective equipment (PPE). Dr. Weber (POPs Consultant) stated that it is possible that PPE may contain PFOS or other chemicals such as teflon (polytetrafluoroethylene). He stated that the 3M Companies are involved in the use of fluorinated chemicals.
- Ms. Jones (BCRC-Caribbean) asked about the use of PFOS in teflon. Dr. Weber (POPs Consultant) stated that PFOS is not used in the production of teflon but a 'sister' formulation is used instead. He also stated that the use of teflon has been under discussion for a long time and it is recommended that teflon pans should not be overheated as the fluorinated chemicals are degraded and can become hazardous.

Working Group – Exercise III

This exercise involved working groups on PFOS and related substance inventory. Groups were asked to complete an inventory work plan for PFOS by analysing the different use areas of PFOS, and assessing which uses and former uses are relevant for their country, who are the stakeholders that needs to be approached to get information, which approach can be used to get information and to generate a timeline as well as resource assumptions.

Ms. Alvarez (BRS Secretariat) started the discussion by asking the groups if they incurred any difficulties in completing the exercise. All the tables indicated that they had no problems with the completion of the work plan in terms of filling in the data. Ms. Alvarez (BRS Secretariat) further stated that it is important to use the inventory guidelines and mentioned that the guidelines also have supporting documents, including a terminology document. The terminology document is important to have a precise understanding of the guidance. She made the example of the definition of 'product' under the Stockholm Convention. Ms. Alvarez (BRS Secretariat) stated that under the Stockholm Convention a product is defined as a chemical formulation and not an article, whilst a chemical is defined as the pure substance. The supporting documents also contain the trade names for chemicals as well as GHS classifications for the chemicals listed. Ms. Alvarez (BRS Secretariat) also mentioned that the website is a one stop shop for information and contains links to other websites with information related to POPs.

Dr. Khan thanked the participants for attending the workshop and briefed the participants on the necessary PPE required for the field trip to Trinidad Cement Limited (TCL).

Session 4: Field Trip

The workshop participants were taken by bus on a field visit to TCL, centrally located on the island. A guided tour of the island en route to and from TCL was given by Dr. Khan (BCRC-Caribbean), making reference to iconic landmarks and points of interest. TCL held a brief discussion session with the participants and a drive through tour of the facility immediately followed.

The briefing session started with an overview of health and safety procedures at TCL, followed by two (2) short videos on the company's portfolio and their manufacturing processes. Dr. Weber (International Consultant) asked about the type of kilns used for cement manufacturing at TCL and discussed alternative options. The HSSE Manager spoke to the participants on the use of old tyres for their cement kilns, emphasizing the benefits as well as her enthusiasm to work with the BCRC-Caribbean on this potential project. Water quality testing for heavy metals, in particular mercury was discussed and TCL confirmed the absence of mercury in their water samples.

The bus tour gave the participants an opportunity to gain a better understanding of the cement manufacturing process at TCL. The tour was guided by TCL's Manufacturing Systems Specialist who gave a thorough review of the systems and procedures at TCL.

Closing Remarks

Dr.Khan (BCRC-Caribbean) officially closed the workshop indicating that the workshop would have developed a resource network in the Caribbean, with the Basel Convention Resource Centre being the focal point to assist countries where possible. Certificates of participation were given to the participants and Mr. D'Auvergne (St. Lucia) thanked the BCRC-Caribbean and the Secretariat of the BRS Conventions on behalf of the participants for an informative and enjoyable workshop.

ANNEX I:
FINAL WORKSHOP AGENDA



**CARIBBEAN SUB-REGIONAL WORKSHOP ON THE UPDATING OF
NATIONAL IMPLEMENTATION PLANS (NIPs) AND POPs WASTES UNDER THE
STOCKHOLM CONVENTION**

8-10 DECEMBER, 2014

**HILTON TRINIDAD AND CONFERENCE CENTRE
PORT-OF-SPAIN, TRINIDAD AND TOBAGO**

AGENDA

Monday, 8 December 2014		
Session 1: Understanding POPs - Addressing uPOPs		
08:30 - 09:00	Registration of Participants	
09:00 - 09:45	Opening of the workshop: <ul style="list-style-type: none"> a. Welcoming remarks b. Hotel Safety Briefing c. Introduction and objectives of the workshop d. Introduction of participants 	Dr. Ahmad A. Khan Director BCRC-Caribbean Ms. Jacqueline Alvarez Programme Officer BRS Secretariat
9:45 – 10:15	<i>Coffee Break and Group Photo</i>	
10:15 – 10:45	Sub-regional workshop on updating national implementation plans and POPs wastes Group Exercise	Ms. Tatiana Terekhova Programme Officer BRS Secretariat
10:45 - 12:30	Understanding the POPs listed after the entry into force of the Stockholm Convention	Ms. Jacqueline Alvarez Programme Officer BRS Secretariat
12:30 - 13:30	<i>Lunch</i>	

Monday, 8 December 2014

Session 1: Understanding POPs - Addressing uPOPs

13:30 - 15:00	Addressing uPOPs a. uPOPs inventories b. Working group- Exercise 1	Mr. Roland Weber POPs Consultant
15:00 - 15:20	<i>Coffee Break</i>	
15:20 - 16:30	a. Working group – Exercise 1 (continued) b. Presentation of outcomes of the working groups and discussion	Participants
16:30 – 17:00	Wrap-up of the first day	Participants
18:30 – 20:30	Reception – Parang Lime at Savannah Terrace	Participants

Tuesday, 9 December 2014

Session 2: Addressing PBDEs - POPs waste management

09:00 - 10:15	Addressing PBDEs a. Inventory of Polybrominated Diphenyl ethers listed under the Stockholm Convention b. Resources available	Ms. Jacqueline Alvarez Programme Officer BRS Secretariat
10:15 - 10:30	<i>Coffee Break</i>	
10:30 – 11:15	E-wastes, transboundary movements and ESM	Ms. Tatiana Terekhova Programme Officer BRS Secretariat
10:30 - 12:30	a. Working group - Exercise II b. Presentation of outcomes of the working groups and discussion	Participants
12:30 - 13:30	<i>Lunch</i>	
13:30 - 15:00	Environmentally Sound Management (ESM) of new listed industrial POPs	Mr. Roland Weber POPs Consultant

Tuesday, 9 December 2014

Session 2: Addressing PBDEs - POPs waste management

15:00 - 15:15	<i>Coffee Break</i>	
15:15 - 16:30	POPs management in the Caribbean countries	Ms Camille Roopnarine Consultant BCRC-Caribbean
16:30 - 17:00	Wrap-up of the second day	Participants

Wednesday 10 December 2014

Session 3: Addressing PFOS

08:30 - 12:00	Addressing PFOS a. Guidance for the inventory of perfluorooctane sulfonic acid (PFOS) and related chemicals under the Stockholm Convention b. Resources available	Mr. Roland Weber POPs Consultant Ms. Jacqueline Alvarez Programme Officer, BRS Secretariat
	<i>Exercise III - Participants will be divided in two or three working groups and they will be requested to work on practical exercises.</i> Presentation of outcomes of the working groups and discussion	Participants
12:00 - 13:00	<i>Lunch</i>	

Session 4: Field Trip

13:00 - 16:30	Field visit – Trinidad Cement Limited	Participants
16:30 - 17:00	General discussion and summary	Participants
17:00 - 17:30	Evaluation and closure of the workshop	Participants

ANNEX II:

OFFICIAL LIST OF WORKSHOP PARTICIPANTS



**CARIBBEAN SUB-REGIONAL WORKSHOP ON THE UPDATING OF NATIONAL IMPLEMENTATION PLANS (NIPs) AND POPs
 WASTES UNDER THE STOCKHOLM CONVENTION
 8-10 DECEMBER, 2014
 HILTON TRINIDAD AND CONFERENCE CENTRE, PORT-OF-SPAIN, TRINIDAD AND TOBAGO**

OFFICIAL PARTICIPANT LIST

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