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Implementation of the Strategic Approach: new and emerging policy issues

Proposed additions to the Global Plan of Action of the Strategic Approach to International Chemicals Management

Note by the secretariat

Executive summary

1. The International Conference on Chemicals Management at its second session agreed to a procedure for the inclusion of new activities in the Global Plan of Action of the Strategic Approach to International Chemicals Management.

2. Two proposals for the addition of activities to the Global Plan of Action have been received. The first, on the environmentally sound management of nanotechnology and manufactured nanomaterials, was submitted by Switzerland and the second, on the environmentally sound management of hazardous substances in the life cycle of electrical and electronic products, by participants at the fourth African regional meeting on the Strategic Approach.

3. Both proposals have been considered at Strategic Approach regional meetings and revised by their proponents to take account of comments received. In accordance with the procedure agreed upon by the Conference at its second session, the Open-ended working Group is invited to assess the proposals and forward them, as appropriate, to the Conference at its third session.

I. Background

4. The Global Plan of Action was adopted by the International Conference on Chemicals Management at it first session, in Dubai, United Arab Emirates, in February 2006, and is one of the three core texts of the Strategic Approach.[1] It describes work areas and associated activities that may be undertaken voluntarily by stakeholders to meet the commitments and pursue the objectives expressed in the Dubai Declaration on International Chemicals Management and the Overarching Policy Strategy. It is structured according to the five objectives of the Overarching Policy Strategy: risk reduction, knowledge and

* SAICM/OEWG.1/1/Rev.1.

1 The Strategic Approach comprises the Dubai Declaration on International Chemicals Management, the Overarching Policy Strategy and the Global Plan of Action.

information, governance, capacity-building and technical cooperation, and illegal international traffic and sets out possible targets and describes indicators of progress, actors and implementation aspects for 273 activities.

5. The Global Plan of Action is intended to provide guidance to all stakeholders at the global, regional, national and local levels when identifying their national priorities and assessing the current status of their actions to achieve the sound management of chemicals. The activities listed in the Plan are to be considered and implemented as appropriate by stakeholders during the implementation of the Strategic Approach, according to their national and regional capacities and priorities.

6. The guidance given in the Plan states that in general when developing their implementation plans stakeholders should accord priority to activities which:

(a) Focus on narrowing the gap between developed countries on the one hand and developing countries and countries with economies in transition on the other hand in their capacities for the sound management of chemicals;

(b) Facilitate the implementation of existing agreements and work areas;

(c) Target issues not currently addressed in existing agreements and work areas;

(d) Ensure that, by 2020:

(i) Chemicals or chemical uses that pose an unreasonable and otherwise unmanageable risk to human health and the environment[2] based on a science-based risk assessment and taking into account the costs and benefits as well as the availability of safer substitutes and their efficacy are no longer produced or used for such uses;

(ii) The risks from unintended releases of chemicals that pose an unreasonable and otherwise unmanageable risk to human health and the environment[3] based on a science-based risk assessment and taking into account the costs and benefits are minimized;

(e) Target chemicals that pose unreasonable and unmanageable risks;

(f) Promote the generation of adequate science-based knowledge on health and environmental risks of chemicals and make it available to all stakeholders.

7. At its second session the International Conference on Chemicals Management adopted a procedure for the inclusion of new activities in the Global Plan of Action. The procedure, which is set out in annex II to the report of the session[4] and is reproduced in annex I to the present note, permits stakeholders to submit proposals for the addition of activities to the Plan. Stakeholders must submit their proposals to the secretariat, with each proposal accompanied by a justification document explaining its merits, and the secretariat must post them on the Strategic Approach website for comment and circulate them for discussion at regional Strategic Approach meetings. The stakeholders at the regional meetings are to prioritize the proposals for consideration by the Open-ended Working Group. The Working Group is then to assess the proposals, selecting a limited number for consideration by the Conference at its next session. The procedure contemplates that the proponent of each proposal, having modified it as necessary to take into account comments and regional consultations, will present it to the Working Group for its consideration.

8. Paragraph 5 (f) of the procedure calls for the Working Group, when assessing a proposal to add activities to the Plan, to take into account the following criteria:

(a) Relevance of the proposal to the objectives of the Overarching Policy Strategy;

2 As stated in paragraph 14 of the Overarching Policy Strategy (footnote 3), groups of chemicals that might be prioritized for assessment and related studies include persistent, bioaccumulative and toxic substances; very persistent and very bioaccumulative substances; chemicals that are carcinogens or mutagens or that adversely affect, among other things, the reproductive, endocrine, immune or nervous systems; persistent organic pollutants; mercury and other chemicals of global concern; chemicals produced or used in high volumes; chemicals subject to wide dispersive uses; and other chemicals of concern at the national level.

3 Ibid.

4 SAICM/ICCM.2/15, annex II and discussion at paras. 39–46.

(b) Extent to which the issue identified in the proposal has adverse effects on human health and the environment;

(c) Magnitude of the problem identified;

(d) Costs and benefits of the proposed activities;

(e) Potential to contribute to participants' implementation of the Strategic Approach or to building their capacity;

(f) Potential impact on the Strategic Approach secretariat budget and Quick Start Programme resources;

(g) Consistency with and complementarity to existing international policy or agreements.

II. Proposed additions

9. At the second session of the Conference the Government of Switzerland proposed that nanotechnologies and manufactured nanomaterials should be considered to be an emerging policy issue and that activities relating to the issue should be added to the Global Plan of Action. At that time the Conference had yet to decide on a procedure for the addition of activities to the plan and time precluded consideration of the proposal at the second session. The Conference did, however, adopt resolution II/4 E on nanotechnology and manufactured nanomaterials, and agreed that the addition of related activities to the Plan would be placed on the agenda for its third session.[5]

10. The proposal from the Government of Switzerland (which includes a proposal for a new work area) is set out in annex II to the present note, without formal editing. The proposal was discussed at the 2011 Strategic Approach regional meetings for Africa (Nairobi, 5, 7 and 8 April), Latin America and the Caribbean (Panama City, 2 and 3 June), Central and Eastern Europe (Lodz, Poland, 27–29 June) and Asia and the Pacific (Beijing, 8 and 9 September) and workshops held to raise awareness of nanotechnologies and nanomaterials held in conjunction with all Strategic Approach regional meetings. At all the regional meetings and associated workshops, the participants discussed amendments to the proposal, and recommendations supporting the addition of activities on nanotechnologies and manufactured nanomaterials to the Global Plan of Action were formally adopted at the African and Latin American and Caribbean meetings. Advance copies of the recommendations are set out in document SAICM/OEWG.1/INF/11.

11. Participants at the African regional meeting heard a report on the outcomes of an international workshop on hazardous substances in the life cycle of electrical and electronic products, which had been held in Vienna from 29 to 31 March 2011, from the chair of that workshop. Subsequently they adopted a resolution calling for the addition of activities on hazardous substances in electrical and electronic products to the Global Plan of Action and prepared a justification document of the kind called for in the procedure adopted by the Conference at its second session. In accordance with that procedure the secretariat made the resolution and the justification document available for the subsequent Strategic Approach regional meetings noted above.

12. Annex III to the present note sets out the proposal from the African regional meeting for new activities (which includes a proposal for a new work area) on hazardous substances in the life cycle of electrical and electronic products, which was also considered at the other 2011 regional meetings noted above. The participants at the Latin American and Caribbean meeting endorsed the proposal and went on to adopt a number of recommendations on the issue, including on matters such as designing products to reduce and eliminate hazardous substances; transparent information on the presence of hazardous substances in products; substitutes that reduce risks to health and the environment; green purchasing strategies; and extended producer responsibility. The full set of recommendations is set out in document SAICM/OEWG.1/INF/11. The participants at the Central and Eastern European and Asian and Pacific meetings considered the proposal with interest and agreed that it should be discussed at the first meeting of the Open-ended Working Group.

5 Ibid., para. 88.

13. In accordance with the procedure for the addition of activities to the Global Plan of Action adopted by the Conference at its second session, the Working Group is invited to assess the two proposals above, taking into account the criteria set out in the procedure. The Working Group may wish to request revision of the proposals, as appropriate, to facilitate their consideration by the Conference.

14. The Conference has already agreed to consider proposed additions to the Global Plan of Action relating to nanotechnologies and manufactured nanomaterials at its third session. The Working Group may wish to consider whether to recommend the proposal on hazardous substances in the life cycle of electrical and electronic products for consideration by the Conference at its third session.

15. For both proposals the Open-ended Working Group may wish to take into account the progress reports on emerging policy issues on hazardous substances in the life-cycle of electrical and electronic waste and on nanotechnologies and manufactured nanomaterials contained in documents SAICM/OEWG.1/12 and SAICM/OEWG.1/13, respectively..

Annex I

Procedure for the inclusion of new activities in the Global Plan of Action of the Strategic Approach

Summary

1. The purpose of the present procedure is to provide a simple, clear, transparent and participatory mechanism to add new activities to the Global Plan of Action.

2. The procedure itself is not intended to review the activities currently included in the Global Plan of Action, or to change the status of table C, as contained in the report of the first session of the International Conference on Chemicals Management (SAICM/ICCM1/7).

3. The procedure will apply from the end of the second session of the International Conference on Chemicals Management.

I. Proposed procedure

4. Proposals for additional activities for inclusion in the Global Plan of Action may be presented by a stakeholder or a group of stakeholders.

5. The mechanism for the discussion and endorsement of proposals for new activities to be included in the Global Plan of Action shall comprise the following steps:

(a) The stakeholder(s) making the proposal will prepare a justification document (an outline of its contents is referenced in chapter II);

(b) The stakeholder(s) will send the document to the secretariat and must also send a copy to the regional focal point(s) for discussion at the regional level. The regional focal point(s) will propose the inclusion of an agenda item to allow such discussion at the following regional meeting(s), or any other consulting process, as appropriate. The regional focal point(s) will inform the secretariat of the outcome of such consultations;

(c) The regional consultation will develop a list with a limited number of priority proposals for inclusion on the agenda of the next meeting of the Open-ended Working Group, taking into account the justification document provided by the stakeholder(s);

(d) The secretariat will post proposals received along with the list developed pursuant to paragraph 5 (c) above on the Strategic Approach website, inviting comments from other stakeholders. Comments received by the secretariat will be compiled and posted on the website. Such comments might be in support of or against the proposal and should set out clear justification of the comments provided;

(e) The comments will be considered by the stakeholder(s) who made the proposal for further amendments as appropriate. The revised document would then be sent to the secretariat for posting on the Strategic Approach website;

(f) The Open-ended Working Group will consider the priority lists developed pursuant to paragraph 5 (c) above and assess the proposals contained therein, taking into account the criteria in paragraph 5 (g) below. The proposal would be presented to the meeting by the stakeholder(s), who will provide justification of their proposal. The Open-ended Working Group will select a limited number of proposals to be forwarded to the Conference;

(g) The Open-ended Working Group will take into account, as appropriate, the following criteria:

(i) Relevance of the proposal to the objectives of the Overarching Policy Strategy;

(ii) Extent to which the issue identified in the proposal has adverse effects on human health and the environment;

(iii) Magnitude of the problem identified;

(iv) Costs and benefits of the proposed activity;

(v) Potential to contribute to participants' implementation of the Strategic Approach or to building their capacity;

(vi) Potential impact on the Strategic Approach secretariat budget and Quick Start Programme resources;

(vii) Consistency with and complementarity to existing international policy or agreements;

(h) The Conference would discuss and consider the forwarded document for endorsement or other action as appropriate.

II. Proposed contents of the justification document

6. The justification document would comprise at least the following information:

(a) Synopsis of background information, including the relevance of the activity to protecting human health or the environment;

(b) Ways in which the activity would contribute to achieving national, regional or global commitments, objectives, priorities and needs;

(c) Ways in which the activity reflects best practice and will be effective;

(d) Information about the means of implementation of the activity at the country or participant level (setting out examples);

(e) Conclusions and specific proposal.

7. As a general rule, the justification document should include a description of the activity itself, including the scale of the activity (national, regional or global level), the work area of the Global Plan of Action in which the activity would be included and a summary of its relevance to protecting human health or the environment. It should also identify suggested actors, targets and time frames, indicators of progress and implementation aspects related to the activity proposed. When proposing a specific activity, the lead proposer should endeavour to avoid duplication with other activities already included in tables A and B of the Global Plan of Action.

8. For further justification, the lead proposer might consider supplementing the proposal with more information where available.

9. The justification document could include a brief description of how the proposed activity could contribute to achieving commitments made under the Dubai Declaration, the objectives included in chapter IV of the Overarching Policy Strategy and general priorities reflected in paragraphs 7 and 8 of the Global Plan of Action.

10. The justification document should not exceed five pages in length, excluding external references and annexes.

Annex II

Justification document for the inclusion of nano-related activities in the Global Plan of Action of the Strategic Approach

Proposal from the Government of Switzerland

Complementing the Strategic Approach to International Chemicals Management Global Plan of Action with the creation of a new work area and associated activities in relation to the environmentally sound management of nanotechnologies and manufactured nanomaterials.

The use of nanotechnologies and manufactured nanomaterials has evolved rapidly since the first session of the International Conference on Chemical Management in 2006. Today, these new technologies are broadly used, and heavy research and development is underway in many countries. Nanotechnologies and manufactured nanomaterials offer potential societal and economical benefits as well as potential environmental, health and safety risks.

Nanotechnologies and manufactured nanomaterials were not yet an issue at first session of the International Conference on Chemical Management, but they were addressed as an emerging issue under SAICM beginning with the second session of the International Conference on Chemical management (ICCM2) in 2009. The SAICM Global Plan of Action (GPA) thus does not yet address this issue.

At ICCM2, a discussion on the inclusion of activities related to manufactured nanomaterials and nanotechnologies in the SAICM GPA took place based on a Conference Room Paper (SAICM/ICCM.2/CRP.6) presented by Switzerland [6]. This CRP included a preliminary table of proposed activities to be added to the GPA. ICCM2 concluded that this issue should be considered at the third International Conference on Chemical Management (ICCM3). Pursuant to this decision, Switzerland consulted with relevant stakeholders, and prepared a formal proposal to add a new work area to the Global Plan of Action, with new activities for the sound management of nanotechnologies and manufactured nanomaterials, at the third International Conference on Chemical Management (ICCM3) in 2012. This proposal dated April 3, 2011 was posted on the SAICM secretariat website and sent to all regional and national SAICM focal points for consultation[7]. Further regional consultations took place during the regional workshops on nanotechnology and manufactured nanomaterials organized back to back with the SAICM regional meetings in Africa (April 2011), Latin America and Caribbean (May 2011), Central and Eastern Europe (June 2011) and Asia Pacific (September 2011). Based on input received through the consultations, Switzerland prepared this final proposal and table of activities, which should serve as a basis for initial discussion at the Open Ended Working Group in November 2011.

The proposed new work area includes activities to:

- Encourage the generation and sharing of hazard and risk data in relation to nanomaterials and nanotechnologies;
- Support technical, legal and institutional information sharing and capacity building for the management of nanomaterials;
- Integrate the management of nanomaterials to ongoing and projected chemical management programs;
- Support the development of adequate risk management tools and mechanisms, including information schemes such as certification systems.

See table 1 below distributing the proposed activities of this new work area under the various SAICM objectives.

6 This CRP will be made available as an information document.

7 This draft proposal will be made available as information document.

In accordance with the procedure for the inclusion of new activities in the GPA of the Strategic Approach adopted during ICCM2, this draft document describes how the activities of the proposed new work area are relevant to protecting human health and the environment; its contribution to national, regional or global commitments, objectives, priorities, and needs; how it will reflect best practices and be effective; and, means of implementation at the country or participant level.

Background information, including relevance of the activity to protecting human health and the environment

A background information document (SAICM/ICCM.2/INF/34) in relation to the emerging policy issue of nanotechnology and manufactured nanomaterials document was prepared by the USA and Switzerland as the two lead countries, to guide the discussion on this emerging issue and provide rationale for proposed cooperative action during ICCM2 in 2009. This document noted that "while SAICM is aimed to providing the overarching policy framework for chemicals policy and sound chemicals management, it does not yet address this increasingly important area of chemicals management"[8].

The same document mentions that some of the same unique properties that make manufactured nanoparticles suitable for certain applications also raise questions about the impacts of nanoparticles on human health and the environment. Toxicity and fate of nanoparticles depends on a variety of physicochemical properties such as size and shape, as well as surface properties such as charge, area, reactivity, and coating type on the particle. These factors also influence the uptake and distribution of nanoparticles in the human body. In addition to particles themselves, the potential human health and ecological impacts of their breakdown products, as well as their interactions with other contaminants, should also be considered.

Once in the bloodstream, studies have shown that some nanoparticles can be transported around the body and are taken up by the liver, spleen, bone marrow, the kidneys, the heart, the reproductive organs, soft tissue and skeleton.9 Furthermore, placental transfer is supported by a recent study, which demonstrated the ability of some nanoparticles to transfer from pregnant mice into the brain and testes of their offspring[10]. A number of studies have also demonstrated that some nanoparticles may be transported directly from olfactory neurons into the central nervous system, crossing the blood-brain barrier.

With respect to the genotoxicity of nanomaterials, studies have shown the ability of nanomaterials to penetrate sub-cellular compartments containing DNA that are usually impervious to man-made chemicals. The intracellular mobility of nanomaterials is especially concerning when viewed in light of studies showing that nanomaterials can, directly and/or indirectly (through oxidative stresses), damage DNA, RNA, and/or histones.[11]

In addition, there is evidence that some nanomaterials may be toxic for ecosystems. For example, nanoscale titanium dioxide can cause mortality or behavioral or physiological changes in environmental indicator species such as water fleas, fish, or algaeand have been shown to stress photosynthetic organisms, potentially leading to the disruption of nitrogen and carbon cycles in aquatic ecosystems.[12]

When chemicals bioaccumulate, tissue concentrations increase over time despite low background environmental levels of the chemical. It is acknowledged that "[b]acteria and living cells can take up nanosized particles, providing the basis for potential bioaccumulation in the food chain."[13] Further

8 Background information in relation to the emerging policy issue of nanotechnology and manufactured nanomaterials, note by the secretariat, SAICM/ICCM.2/INF/34, available at http://www.saicm.org/documents/iccm/ICCM2/meeting%20documents/ICCM2%20INF34%20nano%20background%20E.doc

9 SCENIHR, *Risk Assessment of Products of Nanotechnologies*, pgs 24-29 (2009) (citing several science-based studies) available at http://ec.europa.eu/health/ph_risk/committees/04_scenihr/docs/scenihr_o_023.pdf.

10 Takeda *et al.*, *Nanoparticles Transferred from Pregnant Mice to Their Offspring Can Damage the Genital and Cranial Nerve Systems*, Journal of Health Science, Volume 55, number 1, February 2009

11 *Id.*, pg 32 (referencing Gonzalez et al 2008 and Landsiedel et al 2008).

12 *See e.g.* Carla Cherchi and April Z. Gu, *Impact of Titanium Dioxide nanomaterials on Nitrogen Fixation rate and intracellular Nitrogen storage in Anabaena Variabilis*, 2010, *Environ. Sci. Technol.*, 2010, 44 (21), pp 8302-8307, available at http://pubs.acs.org/doi/abs/10.1021/es101658p.

13 U.S. EPA, *Nanotechnology White Paper*, at p. 50 (2007), available at http://www.epa.gov/OSA/pdfs/nanotech/epa-nanotechnology-whitepaper-0207.pdf (citing Biswass and Wu, 2005).

research has shown that earthworms can absorb copper nanoparticles present in soil.[14] Biomagnification, the increase in concentration of a specific toxic from prey into predator, was also evidenced for nanomaterials in an aquatic environment, involving microscopic life forms, which comprise the base of all food webs.[15] This evidence of bioaccumulation suggests that the risks of nanomaterials to human health and the environment may increase over time. Additionally, "[m]any of the nanomaterials in current use are composed of inherently non-biodegradable inorganic chemicals, such as ceramics, metals and metal oxides, and are not expected to biodegrade."[16]

Because manufactured nanomaterials are already on the market in a growing number of products including paints, cosmetics, clothing, household appliances, food packaging, etc. countries should give due consideration to potential health or environmental implications of such use of nanomaterials during their whole life cycle; e.g. the potential effects of production of the nanoscale materials, as well as the disposition of nanomaterials that may, for example, require new hazard communication programs to recyclers or new concerns for disposal.[17] In this context, according to ICCM2 preparatory documents, SAICM should provide a supportive international framework for developing countries and countries with economies in transition to develop and implement concrete policies and activities[18].

The new GPA activities in relation to nanotechnologies and manufactured nanomaterials herein proposed by Switzerland could thus help countries to address this issue, to develop and implement appropriate policies , and to access support for such policies.

How the activity would contribute to achieving national, regional or global commitments, objectives, priorities and needs

SAICM's general objectives are detailed in the Overarching Policy Strategy (OPS) and Dubai Declaration. These overall objectives include risk reduction, knowledge and information, Governance and capacity building and technical cooperation. The GPA is the evolving tool that identifies work areas and associated activities that may be undertaken by stakeholders in order to pursue the commitments and objectives expressed in the SAICM OPS and the Dubai Declaration. The proposed new work area aims at providing an implementation path to reach the OPS objectives in relation to nanotechnologies and manufactured nanomaterials in agreement with objective 14(e) of the OPS.

During ICCM2, a resolution on nanotechnologies and manufactured nanomaterials was adopted. This resolution called on SAICM stakeholders to provide support to countries in development and countries with economies in transition to enhance their capacity to use and manage nanotechnologies and manufactured nanomaterials responsibly (operational paragraph 1), and on the wider dissemination of human health and environmental safety information in relation to products containing nanomaterials (operational paragraph 7). The resolution also requested the promotion of appropriate actions to safeguard human health and the environment (OP 2), recognized the role of regulatory, voluntary and partnership approaches for the responsible management of nanotechnologies and manufactured nanomaterials (OP3) and recommended the establishment of multi-stakeholder dialogues (OP 6). New GPA activities proposed for inclusion in the new work area relating to nanotechnologies and manufactured nanomaterials would support the realization of these objectives. At subsequent SAICM regional meetings in 2009/10 and 2011, in Africa , Latin America and Caribbean, Central and Eastern Europe, and Asia & Pacific regions further elaborated on specific national and regional needs in relation to the safe management of nanotechnologies and manufactured nanomaterials. Those needs relate to the establishment of partnerships and collaborations; to the necessary funding for research on potential risks to human health and the environment; to the development of legal provisions to ensure safe practices with regards to the production, use, transport and disposal of manufactured nanomaterials.

14 Jason M. Unrine, Olga V. Tsyusko, Simona E. Hunyadi, Jonathan D. Judy, Paul M. Bertsch. *Effects of Particle Size on Chemical Speciation and Bioavailability of Copper to Earthworms Exposed to Copper Nanoparticles.* 2010, *Journal of Environment Quality*, 2010; 39 (6): 1942, available at 10.2134/jeq2009.0387.

15 R. Werlin, J. H. Priester, R. E. Mielke, S. Krämer, S. Jackson, P. K. Stoimenov, G. D. Stucky, G. N. Cherr, E. Orias, P. A. Holden. *Biomagnification of cadmium selenide quantum dots in a simple experimental microbial food chain*. Nature Nanotechnology, 2010; DOI:10.1038/nnano.2010.251, available at http://dx.doi.org/10.1038/nnano.2010.251

16 U.S. EPA, *Nanotechnology White Paper*, *supra* note 15, p. 50.

17 See supra note 1.

18 See supra note 1.

The new activities that Switzerland proposes to add to the SAICM GPA, are designed to support the fulfillment of those needs and priorities, as discussed in the different regional consultations and the resolution adopted unanimously by the African and GRULAC regions in 2009/10 and 2011.

For example, in order to satisfy the demand for the set up and enforcement of legal provisions to ensure safe practices with regards to all stages of nanomaterials life, Switzerland proposes to include activities to assess the gaps in existing legal and institutional frameworks, promote and enhance information sharing on national and regional policy and regulatory initiatives, identify, strengthen and enforce legal provision for the environmentally sound management of waste containing nanomaterials, and promote technical guidelines and harmonized standards.

Similarly, to meet the needs expressed by those regions and countries for better information regarding potential human health and environmental impacts of manufactured nanomaterials and, Switzerland proposes to add activities to increase the understanding of the environmental health and safety implications through further information sharing and research of manufactured nanomaterials.

Ways in which the activities reflect the best practices and will be effective

The activities included in the proposed new work area on nanotechnologies and manufactured nanomaterials intend to facilitate the sharing of best practices, including by facilitating the exchange of information on existing regulatory and voluntary initiatives, for example in the area of protection of workers manufacturing, using or disposing of manufactured nanomaterials.

Furthermore, by promoting sharing of technical and regulatory information, it would allow countries less advanced to benefit from knowledge developed by most advanced countries, arising in particular from existing regional initiatives such as the OECD Working party on Manufactured Nanomaterials and definition efforts from Australia, Canada, the European Union, the United states of America and International Standardization Agency.

Means of implementation of the activity at the country or participant level (Setting out examples)

Activities proposed, such as promoting private/public partnership, including nanomaterials and nanotechnology in existing chemical management programs, refining guidance for such inclusion and developing pilot projects in developing countries and countries with economies in transition, developing nano labeling schemes based on best practices, could provide appropriate means of implementation at the country or participant level.

WORK AREAS ADDRESSING RISK REDUCTION (OBJECTIVE 1)					
Work Area	**New Activity**	**Actors**	**Target/Time frame**	**Indicators of progress**	**Implementation aspects**
Nanotechnologies and Manufactured nanomaterials	1. Develop, establish and promote adoption of technical guidelines and harmonized standards on nanotechnologies and manufactured nanomaterials based on precaution.	National governments, Intergovernmental and international organizations, industry, NGO	2012 – 2017	Guidelines and standards are developed.	
	2. Identify, strengthen and implement legal instruments to ensure the use of best practices in the production, use, transport and disposal of manufactured nanomaterials.	National governments, Intergovernmental and international organizations, industry, academia, NGOs and other interested groups	2012-2015	Best practices for production, use, transport, and disposal of manufactured nanoamterials are in place and implemented in all relevant sectors.	
	3. Increase the active involvement of the health sector to identify, treat and track diseases potentially caused by occupational exposure to manufactured nanomaterials and develop and implement preventive interventions.	WHO, ILO, national governments, industry NGOs and other interested stakeholders	2012-2020	WHO/ILO project to identify, treat and track diseases potentially caused by occupational exposure to manufactured nanomaterials. Guidance on preventive measures are adopted.	
Nanotechnologies and Manufactured nanomaterials	4. Increase the understanding of the environmental, public and occupational health and safety implications, including risk assessment, of nanotechnologies and manufactured nanomaterials through further research.	National governments, Intergovernmental and international organizations, industry, academia, NGOs and other interested groups	2012 – 2018	Number of publicly available research paper on hazards and risks, significantly increase in all regions.	Coordination by IOMC
	5. Support and where feasible, increase funding for independent research on the environmental and occupational health and safety implications of manufactured nanomaterials.	National governments, Intergovernmental and international organizations, industry, NGO, Academia	2012 – 2020	Number of publicly available peer reviewed research papers on hazards and risks significantly increases. Increased allocation of national budget towards research on nanotechnologies. Number of funding opportunities available to promote nanotechnology	Creation of international and national information clearing houses.

WORK AREAS ADDRESSING RISK REDUCTION (OBJECTIVE 1)					
Work Area	**New Activity**	**Actors**	**Target/Time frame**	**Indicators of progress**	**Implementation aspects**
				research. Ratio of approved project versus proposed projects. Overall number of students in the nano-toxicology field.	
	6. Enhance information sharing on national and regional policy and regulatory initiatives.	National governments, Intergovernmental and international organizations, industry, NGO, Academia	2012 – 2015	All stakeholders are informed of hazards and risks of nanomaterials. All relevant stakeholders have access to available relevant information.	IOMC
	7. Develop a national inventory reflecting the national situation of nano-research, production, and marketing.	National governments, Intergovernmental and International organizations, industry, NGOs, Academia, other interested groups	2012-2015	Number of national inventories developed.	
	8. Develop mandatory labeling schemes for manufactured nanomaterials.	National governments, Intergovernmental and international organizations, industry, NGO	2012 – 2015	Nano product labels developed.	
	9. Develop national or regional registers for manufactured nanomaterials produced, imported or integrated into products.	National governments, Intergovernmental and international organizations	2012-2015	Number of national registers in place.	
	10. Develop and promote a voluntary global scheme certifying the presence of manufactured nanomaterials in products.	National governments, Intergovernmental and international organizations, industry, NGO	2012-2020	Certification scheme is developed.	
	11. Develop GHS criteria to address the safety of manufactured nanomaterials.	National governments, intergovernmental organizations, industry, NGOs	2012-2015	Criteria for labeling of manufactured nanomaterials are developed and incorporated into the GHS.	UN ECOSOC, Regional economic integration organizations, WTO, WCO, ECOSOC

WORK AREAS ADDRESSING RISK REDUCTION (OBJECTIVE 1)					
Work Area	**New Activity**	**Actors**	**Target/Time frame**	**Indicators of progress**	**Implementation aspects**
	12. Improve existing information management systems to include information specific to nanotechnologies and manufactured nanomaterials.	National governments, Intergovernmental and international organizations, industry, NGO	2012 – 2015	MSDS (Material Safety Data Sheet) includes relevant nano information. Databases (e.g. nano portals) are developed.	
	13. Develop life cycle analysis (LCA) for manufactured nanomaterials	National governments, international organizations, NGOs, Industry, trade unions, chamber of commerce,	2012 -2015	Number of LCA developed for manufactured nanomaterials; Availability of LCA tools for manufactured nanomaterials	
Nanotechnologies and Manufactured nanomaterials	14. Identify and increase access to, and refine where necessary, existing guidance on the incorporation of nanotechnologies and manufactured nanomaterials in national chemicals management programs, and identify where gaps exist.	National governments, Intergovernmental and international organizations, industry, NGO	2012 – 2015	Nanomaterials are included in increasing number of chemical management programs. Increased access to existing guidance available.	
	15. Incorporate nanomaterials and nanotechnologies in national chemicals management program.	National governments, Intergovernmental and international organizations, industry, NGO	2012 – 2015	Nanomaterials are included in increasing number of chemical management programs.	Involvement of all stakeholders and use of guidelines developed by intergovernmental organizations.
	16. Identify and address existing gaps and needs in existing legal and institutional framework addressing nano specific issues, including in relation to enforcement.	National governments, Intergovernmental and international organizations, industry, NGO, Academia	2012 – 2015	Reports on regulatory and institutional gaps. New legislation addressing the management of nanotechnologies and manufactured nanomaterials is in place and enforced.	
	17. Establish national policy and institutional coordination plan regarding nanotechnologies and manufactured nanomaterials.	National governments, Intergovernmental and international organizations, industry, NGO	2012-2015	Number of national policy and institutional coordination plans in place.	Involvement of all stakeholders and use of guidelines developed by intergovernmental organizations.

WORK AREAS ADDRESSING RISK REDUCTION (OBJECTIVE 1)					
Work Area	**New Activity**	**Actors**	**Target/Time frame**	**Indicators of progress**	**Implementation aspects**
	18. Identify, strengthen and enforce regulatory provisions for the environmentally sound management of waste containing nanomaterials.	National governments, Intergovernmental and international organizations, industry, NGO	2012 – 2015	Relevant legislation or/and best practices are in place and implemented in all relevant sectors.	Develop pilot project for the sustainable management of waste containing nanomaterials.
	19. Develop and/or update existing legislation covering the entire spectrum of work situations in which nanomaterials are handled, to protect workers, the public and the environment, from potential harm related to nanotechnologies and manufactured nanomaterials.	National governments, Intergovernmental and international organizations, industry, NGO	2012 – 2015	Relevant legislation is fully implemented in all relevant sectors.	IOMC
	20. Promote extended producer responsibility (EPR) throughout the life cycle of manufactured nanomaterials.	National governments, Intergovernmental and international organizations, industry or industry associations, academia, NGOs	2012-2015	Number of countries who have EPR schemes in place (voluntary or mandatory). Number of manufacturers applying EPR schemes.	Involve Association of industrial chambers of commerce.
Nanotechnologies and Manufactured nanomaterials	21. Increase the understanding of environmental, public and occupational health and safety implications of manufactured nanomaterials through awareness raising and capacity building, and information sharing and dissemination.	National governments, Intergovernmental and international organizations, industry, academia, NGOs, consumer groups, public and community research centers, trade unions and other interested groups	2012-2020	Key stakeholders, particularly consumers and workers are informed of risks and hazards of nanomaterials. Number of national and regional workshop on nanomaterials. Development of inventories of nanomaterials including their environmental, health and safety risks accessible to all stakeholders.	

WORK AREAS ADDRESSING RISK REDUCTION (OBJECTIVE 1)					
Work Area	**New Activity**	**Actors**	**Target/Time frame**	**Indicators of progress**	**Implementation aspects**
	22. Promote public and private sectors partnerships for the environmental sound management of nanomaterials with adequate financial support to assist developing countries, small island developing states and countries with economies in transition to build scientific, technical, and legal capacity to address associated risks.	National governments, Intergovernmental and international organizations, industry, NGO, Academia	2012 – 2015	Number of public/private partnerships signed.	
	23. Develop guidance on legal and institutional gaps and needs assessment.	National governments, Intergovernmental and international organizations (IOMC), industry, academia, NGOs and other interested groups	2012-2015	Guidance document is available.	

Annex III

Justification document for the inclusion of hazardous substances within the life cycle of electrical and electronic products in the Global Plan of Action of the Strategic Approach to International Chemicals Management: complementing the Global Plan of Action with the creation of a new work area and associated activities in relation to the environmentally sound management of hazardous substances within the life cycle of electrical and electronic products

Proposal from the fourth African regional meeting

1. The manufacture of electrical and electronic products (e-products) has increased dramatically over the past several decades and there are now billions of such products produced and consumed worldwide. Furthermore, the manufacture of electrical and electronic products relies on and uses thousands of chemicals and other materials, many of which are hazardous. Hazardous substances contained in consumer e-products include phthalates, heavy metals such as cadmium, lead, and mercury, and persistent organic pollutants such as brominated flame retardants, in addition to other carcinogens, mutagens, reproductive and developmental toxins, and endocrine-disrupting compounds.[19]

2. Another issue of concern is the paucity of data on hazardous substances throughout the life cycle of such products, and in particular those found in e-products and in the workplace and communities around extraction, production and disposal sites.[20]

3. Large-scale consumption of e-products has caused the massive production of e-waste. This has become a global crisis, but not only in terms of quantity. In addition, this crisis stems from the various hazardous substances contained within the e-products that, when improperly managed, especially in countries with economies in transition and developing countries, are released into the environment, thereby posing significant environmental and human health risks.

4. Hazardous substances in the life cycle of e-products were adopted as an emerging policy issue by the International Conference on Chemicals Management at its second session, in May 2009. The Global Plan of Action of the Strategic Approach to International Chemicals Management is, however, yet to take on this issue. The African region is proposing to include a new work area in the Global Plan of Action, including new activities for the environmentally sound management of hazardous substances in the life cycle of e-products, at the third session of the International Conference on Chemical Management, in 2012.

5. The proposed new work area includes the following activities to tackle upstream, midstream and downstream issues in the life cycle of e-products:

(a) Identify, collate and promote an international set of best practice resources for managing chemical information flows in e-products, including information on hazard and risk data for health and safety for humans and the environment;

(b) Compile and disseminate best practices in business organizational procedures for managing hazardous substances in e-products; and create guidance documents for interested parties and stakeholders that include chemical management systems; investments in green chemistry; prevention activities such waste minimization; in addition to capacity-building for the sound management of e-products;

(c) Compile, share and disseminate information on chemicals of concern to human health and/or the environment in e-products, including summaries of the hazard and toxicological data of these chemicals;

19 SAICM/ICCM.2/INF/36.

20 SAICM/RM/Afr.4/INF/1, annex I, and SAICM/RM/LAC.2/3, annex C.

(d) Promote environmentally sound manufacturing through sustainable cleaner production and pollution prevention; in addition to the identification of tools and best practices that foster design for hazardous chemical reduction, elimination and substitution;

(e) Support policy, legal, technical and regulatory actions that promote hazardous chemical reduction, elimination and substitution in e-products;

(f) Formulate, promote and implement health-based exposure limits for workers that provide equal protection in the workplace and the community;

(g) Promote and implement integrated policies on environmentally sound management of e-waste, ensuring the involvement of relevant stakeholders.

6. These activities are described in further detail in the table below.

7. In relation to changing unsustainable patterns of consumption and production, the Plan of Implementation of the World Summit on Sustainable Development calls for a renewed commitment, as set out in Agenda 21, to the sound management of chemicals throughout their life cycle and of hazardous wastes for sustainable development and for the protection of human health and the environment; and to supporting developing countries in strengthening their capacity for the sound management of chemicals and hazardous wastes.

8. The present document describes how the activities of the proposed work area are relevant to protecting human health and the environment and to meeting global, regional and national needs, priorities, objectives and goals. It will reflect international best practices and efficient means of implementation at the national or international level, as appropriate.

Background information, including the relevance of the activity to protecting human health and the environment

9. Document SAICM/ICCM.2/INF/36, which was prepared as background information to guide the discussions on the emerging policy issue of electronic waste and to provide a rationale for proposed cooperative actions at the second session of the International Conference on Chemicals Management noted that there were a number of activities in the Global Plan of Action concerning waste management and illegal traffic but none specifically addressed the special problems of electronic waste and e-products.

10. The document underscores the fact that e-waste and e-products contain a myriad of toxic components and materials that can cause significant damage to the environment, human and animal health if crude recycling and disposal methods are used. The dumping of e-waste in any environment has negative health consequences such as the leaching of toxins (into the soil, air and groundwater) which may later enter the food chain. Medical experts have warned that exposure to these substances can cause damage to blood, nervous systems, DNA, immune systems and kidneys; can lead to respiratory and skin disorders and lung cancers; and can interfere with regulatory hormones and brain development (Osuagwu and Ikerionwu, 2010).

11. Various e-products have been confirmed as hazardous using the toxicity characterization leaching procedure (Musson and others, 2000; Li and others, 2006). The actual operation of several end-of-life processes for e-waste, such as landfills, incineration with municipal solid waste and mechanical recycling, results in the emission of heavy metals and organic pollutants to air, water and soil.

How the activity would contribute to achieving global, regional and national needs, priorities, objectives and goals

12. The Overarching Policy Strategy of the Strategic Approach recognizes the importance of adopting a life-cycle approach to chemicals management and for adequate information at all stages of the life cycle, in chemicals in products and illegal international traffic. Paragraphs 13–15 and 18 of the Overarching Policy Strategy are particularly relevant.

13. Paragraph 13 sets out the 2020 goals of the Strategic Approach in terms of the sound management of chemicals throughout their life cycle; and paragraph 14 emphasizes the need to minimize risks to human health and the environment and vulnerable groups subject to exposure to toxic chemicals throughout the life cycle of chemicals. Paragraph 15 aims to ensure that information on chemicals throughout their life cycle including where appropriate, chemicals in products, is available, accessible, user friendly, adequate

and appropriate to the needs of all stakeholders; while paragraph 18 aims to prevent illegal international traffic in toxic, hazardous, banned and severely restricted chemicals, including products incorporating these chemicals, mixtures and compounds and wastes.

14. The overall objectives of the Strategic Approach, as set out in the Overarching Policy Strategy, include pollution prevention, risk reduction, capacity-building, knowledge and information sharing, governance, partnership and technical cooperation. The Global Plan of Action provides the platform that identifies work areas and associated activities that may be undertaken by stakeholders to implement the objectives and goals in the Overarching Policy Strategy. The new work area proposed provides a road map to attain the Overarching Policy Strategy objectives in relation to hazardous substances in the life cycle of e-products.

15. Resolution II/4, on hazardous substances within the life cycle of electrical and electronic products of the International Conference on Chemicals Management invited the participating organizations of the Inter-Organization Programme for the Sound Management of Chemicals and the secretariats of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal and the Stockholm Convention on Persistent Organic Pollutants to develop, plan and convene, within available resources, a workshop to consider issues in relation to electrical and electronic products based on a life-cycle approach. In planning the workshop the following objectives were considered important: (i) Reduction and eventual phase out of restricted or hazardous substances in e-products and e-waste; (ii) Information needs about hazardous substances in e-products and e-waste along the product chain in their life cycle, (iii) Development of technical guidance and capacity-building; (iv) Governance; and (v) Awareness-raising and education. The new work area activities proposed for inclusion in the new GPA relating to hazardous substances in the life cycle of e-products would support the realization of these objectives.

16. In addition, four regional meetings were organized by the Strategic Approach secretariat during 2009 and 2010 in Africa, Asia and the Pacific, Central and Eastern Europe and Latin America and the Caribbean, at which participants discussed the issue of hazardous substances in e-products and provided clarification about country needs in those regions and expectations about the outcome of the international workshop. Much emphasis was laid on the issue of green design, the phasing-out, where feasible, of harmful substances in e-products, the need to protect workers' health throughout the life cycle of e-products and the need for capacity-building and institutional strengthening.

17. The new work area that Africa propose to include in the Global Plan of Action is designed to support the fulfillment of the needs, priorities and goals as adopted by the participants at the above-mentioned regional meetings.

Ways in which the activity reflects the best practices and will be effective

18. The activities included in the proposed new work area aim to facilitate the adoption and sharing of international best practices, information sharing and exchange on hazard and risk data; institutional and regulatory voluntary initiatives, for example exposure and monitoring; health surveillance and disease prevention to ensure the protection of workers during the manufacture, use and disposal of e-products.

Means of implementation at the global, regional or national level

19. Some of the activities proposed, including strengthening existing chemical management mechanisms to include hazardous substances in e-products, promoting public-private partnership, developing information or labelling schemes on hazardous substances in e-products based on international best practices, capacity-building within the life cycle and developing pilot projects, could provide means of implementation at the national level. Bilateral and multilateral cooperation could be means of implementation at the regional or global level.

Proposal for inclusion of new activities under a new work area relating to hazardous substances in the life cycle of e-products:

Work area	New activity	Actors	Target time	Indicators of progress	Implementation aspects
E-products green design	Compile and communicate lists of chemicals of concern to human health or the environment in e-products	National Governments, European Union, United States Environmental Protection Agency, Basel Convention, Stockholm Convention, Rotterdam Convention, Strategic Approach, industry, non-governmental organizations, Partnership for Action on Computing Equipment, Solving the e-Waste Problem, UNIDO, academic institutions	2012–2015	Database and information freely available on hazards and risks on chemicals in e-products	IOMC coordination Create coordination committees at the national level and networks (national, regional and global) involving all key stakeholders
	Promote public and private partnerships for the environmentally sound management of hazardous substances in e-products	National Governments, European Union, industry, non-governmental organizations, Basel Convention, Stockholm Convention, Partnership for Action on Computing Equipment, Solving the e-Waste Problem, UNIDO, academic institutions	2012–2015	Number of partnerships established Number of projects undertaken	Establish or use existing private-public partnership initiatives Global, regional and national networks involving all key stakeholders
	Assess and fill gaps in existing policies, legal and institutional framework addressing design of e-products	National Governments, European Union, non-governmental organizations, Basel Convention, Stockholm Convention, UNIDO, academic institutions	2012–2015	Reports on regulatory and institutional gaps in green e-products design and number of illegal shipments of end-of-life equipment stopped. Number of countries with relevant policies, laws, regulations and guidelines	Inter-agency and multi-stakeholder committees created
	Identify tools and best practices that advance design for hazardous chemical reduction, elimination and substitution	National Governments, industry, non-governmental organizations, UNIDO, Stockholm Convention, Basel Convention, academic institutions	2012–2015	Number of green design tools identified Best practices guidance	IOMC National, regional and global coordination
	Promote harmonization of policies and regulations that support hazardous chemical reduction, elimination and substitution in e-products,	National and regional Governments, industry, non-governmental organizations, academic institutions	2015	Number of policies and laws harmonized	National, regional and global coordination

Work area	New activity	Actors	Target time	Indicators of progress	Implementation aspects
Environmentally sound manufacturing	Promote sustainable production and pollution prevention	National Governments, industry, non-governmental organizations, UNIDO, UNITAR, Basel Convention, Stockholm Convention, Basel Convention regional centres, cleaner production centres	2012–2015	Pollution prevention tools in place Level of compliance with international best practices Awareness material Pollution monitoring schemes in place	Infrastructure Technical capacity
	Prioritize reduction of exposure; eliminate or substitute the most hazardous substances of concern[21] and production processes	National Governments, industry, non-governmental organizations, UNIDO, WHO, ILO, UNITAR, Basel Convention, Stockholm Convention	2012–2015	Number of substitutes /alternatives produced and effective Health status of workers and local communities	Infrastructure for production of alternatives Technical capacity
	Conduct research and development on safer chemicals substitutes and safer production processes and environmentally sound management of e-waste	National Governments, industry, non-governmental organizations, UNIDO, UNITAR, Basel Convention, Stockholm Convention, World bank, academic institutions	2012–2015	Research outputs	Provision of assistance including training and equipment
	Formulate, promote and implement health-based exposure limits for workers that provide equal protection in the workplace and the community	National Governments, industry, non-governmental organizations, ILO, WHO, UNIDO, UNITAR, Basel Convention, Stockholm Convention, World Bank	2012–2015	Number of operational health related standards developed	Standard setting and licensing Exposure monitoring Availability of occupational health information
Environmentally sound management of e-waste	Assess gaps in existing policy, legal and institutional framework, including control of transboundary movement and illegal traffic	National and regional Governments, Basel Convention, UNIDO, industry, non-governmental organizations, European Union Network for the Implementation and Enforcement of Environmental Law, International Network for Environmental Compliance and Enforcement	2012–2015	Number of policies/laws/regulations developed and enforced Number of illegal traffic shipments stopped	Technical capacity Multi-stakeholder participation

21 Substances of concern include those that are persistent, bioaccumulative and toxic and/or those that are carcinogens, mutagens, reproductive or developmental toxins, neurotoxins, neurodevelopmental toxins, respiratory toxins, immunotoxins, organ system toxins, and/or endocrine-disrupting compounds.

Work area	New activity	Actors	Target time	Indicators of progress	Implementation aspects
	Establish voluntary approaches Extended producer responsibility-e-products take-back schemes	National Governments, industry, non-governmental organizations, consumer associations	2012–2015	Number of take-back schemes End-of-life products	Infrastructure including regulations
					Infrastructure Technical capacity
	Conduct pilot projects on environmentally sound management of e-waste	National and regional Governments, UNIDO, Stockholm Convention, Basel Convention, Partnership for Action on Computing Equipment, Solving the e-Waste Problem, Basel Convention regional centres, industry, academic institutions	2012–2015	Number of informal sector persons successfully trained in the environmentally sound management of waste; sustainable collection and dismantling of end-of life e-products; and the control of illegal traffic in end-of-life e-products. Number of pilot projects Number of project reports	Training tools Provision of assistance including training and equipment
Awareness-raising	Promote awareness, information, education and communication for all relevant stakeholders along the supply chain	National Governments, UNIDO, Stockholm Convention, Basel Convention, Partnership for Action on Computing Equipment, Solving the e-Waste Problem, Basel Convention regional centres, industry, academic institutions, non-governmental organizations	2012–2015	Amount of awareness, information, education and communication materials produced Level of awareness among stakeholders	Infrastructure for dissemination of information