POTENTIAL NEEDS ON THE GLOBAL FRAMEWORK FOR THE CONTROL OF CHEMICAL POLLUTION: EXISTING INTERNATIONAL FRAMEWORK AND EXPECTED PERSPECTIVES FOR THE IPCP-INTERNATIONAL PANEL ON CHEMICAL POLLUTION[1,2]

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Abstract
Potential needs on the global framework of chemical pollution and the expected role of proposed international panel on chemical pollution (IPCP) were discussed based on the continuing discussion on IPCP and general background on the existing international frameworks. The review of existing international organizations shows that many organizations are covering wide area of chemical pollution by the "mosaic" way. To establish effective collaboration to solve the chemical pollution issues of global scale, potential needs for "interface" function, between sciences and assessment organizations, is identified. IPCP may play a major role to fulfill this needs and this would help solving the issues under more in-depth and comprehensive views based on effective collaboration of science and governmental functions, by the proposed IPCP structure.

Introduction
Environmental pollution concern by contaminant chemicals have long been studied, assessed, managed and controlled by various mechanisms including research activities, mandatory/voluntary effort by industrial societies, and governmental and international frameworks. In recent years, establishment of the Stockholm Convention for Persistent Organic Pollutants leads the implication to the ubiquitous contamination by some trace chemicals on global scale. However, there is less scientific forum for the discussion of global issues on chemical pollution control.
This document is going to describe, first to review the existing international organizations based on the information we collected in the project of Council for Science and Technology Policy in Japan, and second to present our idea on how scientific communities and government-based organizations can collaborate to obtain more sound and effective way for chemical pollution control.

Potential needs for the global framework on chemical pollution: General issues
Chemicals that may be concerned for their potential effects are huge and with varieties in terms of both number and nature of the chemicals. Chemicals can be categorized based on several standpoints including (1) properties of the chemicals, (2) nature of production, (3) use pattern, (4) possibility of disposal and/or destruction. Properties (1) determine the basic characteristics of the potential impacts of the chemicals in terms of physico-chemical behavior like transport nature and toxicological characteristics like endocrine disruption. The nature of production (2) covers the range of chemicals produced by, for example, industrial production, un-intentional by-products, and compounds of natural origin. The use pattern (3) may include the use for raw materials at industry, consumer use, and un-intentional spreading by natural and anthropogenic processes. The type of disposal (3) may cover the range of easily decomposed products that do not need intentional disposal to the persistent chemicals that need exhaustive destruction.
The wide range of area of concern above raises the needs of wide range of sciences to be integrated for the effective control of those chemicals. However, majority of those chemicals are spread over the globe thoroughly, not only by the natural mechanisms of long-range transport like POPs (persistent organic pollutants) but also by the anthropogenic mechanisms of global use or trade and industrial mechanisms that deliver the chemicals ubiquitous to the globe. Both of two very different mechanisms may result in, however, comparable consequences of ubiquitous and prolonged existence of the chemicals on the global scale, which may affect humans and biota through various toxicological mechanisms. This understanding naturally imply the needs on the global mechanisms for the chemical pollution control, which may determine the key-needs of IPCP idea[1,2].

Existing international organizations and their area and mission

There are various existing international organizations and programs relating to chemical pollution issues as summarized in Figure 1. Activities of those include risk assessment, management, control, education and training, data compilation and sharing, pesticides, un-intentional products and new chemicals based on their own standpoint or mission of each organization. Several programs between individual governments and/or international organizations exist to integrate the effort of each organization/government. Among those SAICM may be the one of most comprehensive framework on the chemical pollution issues, although others including IFCS may have another comprehensive scope on the chemical safety issues.

Convention-based activities

There are slightly different activities that are mainly based on the international conventions. Those include the activities relating to Stockholm Convention on POPs, Long-Range Transboundary Air Pollution (LARTP), Helsinki Convention, Basel Convention and others. Convention-based activities are generally active and have mandatory constraint for participating parties, which results in the solid structure to reach specific objective by international collaboration.

Although the scope of such activities are somewhat restricted by each purposes based on target chemicals (POPs), transboundary transport (LARTP), regional concern (Helsinki), or nature of material (Basel), those can be effective mechanisms for the basis of the global control of chemical pollution issues. Convention generally has their own body of secretariat functions, in many cases relying on international organization like UNEP.

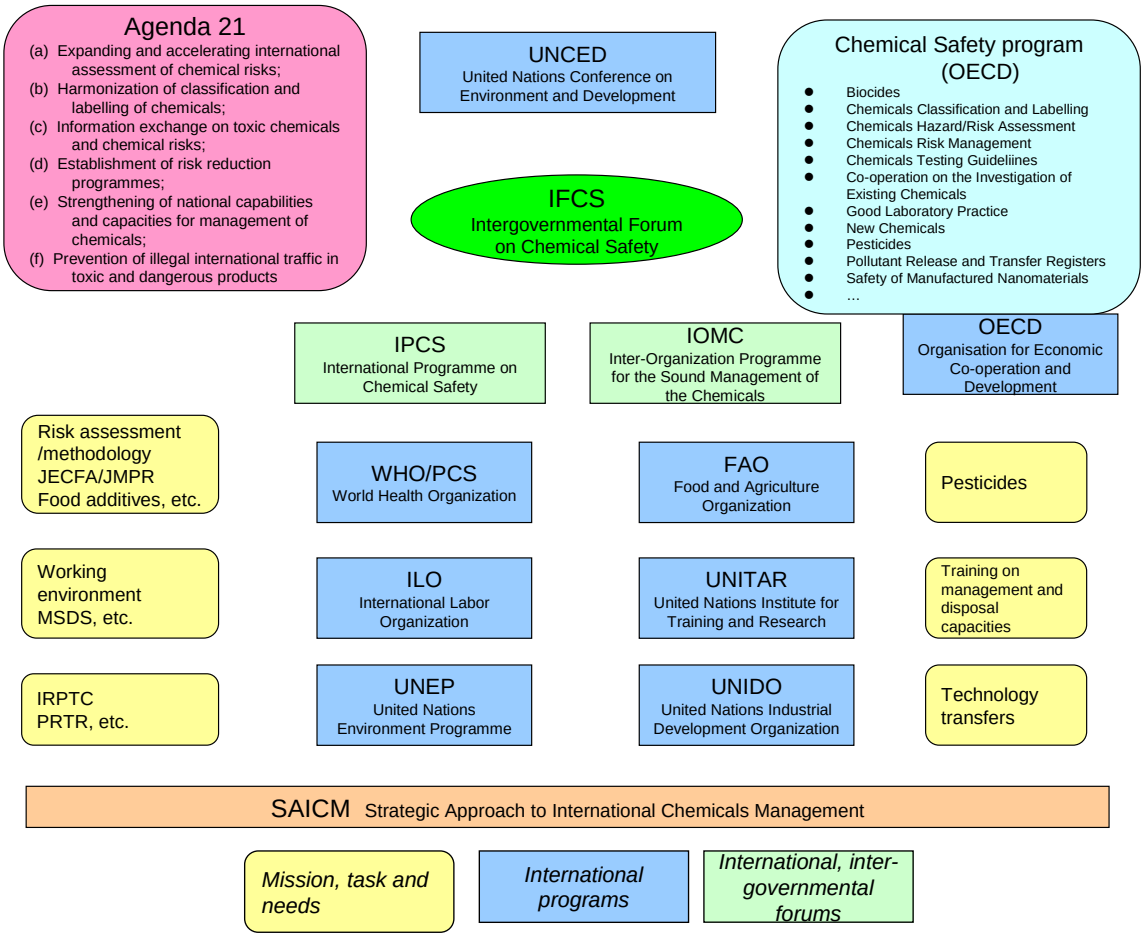

Figure 1 Existing international organizations and the major missions and mandates (prepared based on the report of CSTP[1])

Reference to the IPCC-Intergovernmental Panel on Climate Change

Possible implication can be addressed from the IPCC – Intergovernmental Panel on Climate Change, when considering the global framework of chemical pollution. IPCC is established by IMO (International Meteorological Organization) and UNEP. Although it was established as intergovernmental panel, many scientists are involved as the major contributors. The task of IPCC is to provide assessment on the status of the climate change and related issues, based on the review of the scientific achievements.

This is interesting example on how science and governmental framework work together. In case of IPCC, maybe important point is that the purpose of the assessment is relatively straightforward, and the assessment process is essentially pure scientific discussion mainly within meteorology. As the topic is global meteorology, needs on the scientific discussion on global scale might be easily accepted by wide range of people.

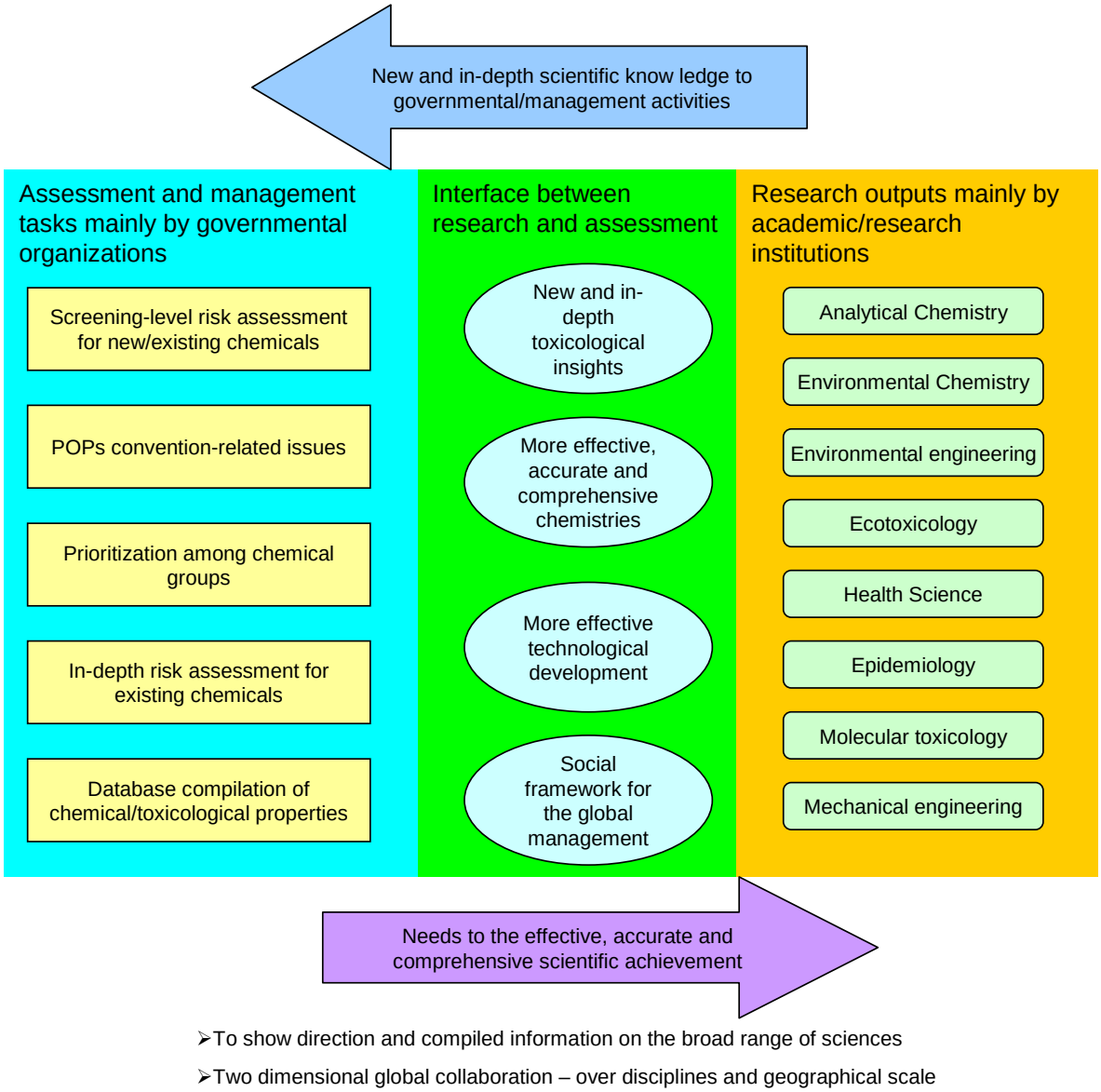

Figure 2 Expected style of collaboration between research and assessment tasks through “interface” functions

Potential needs on the global framework on chemical pollution: More specific thoughts

On the other hand, is there any single, straightforward objective that science needs to work on a global scheme? In my view, there is apparent but now potential/hidden needs on the global collaboration of the science for the chemical pollution control. Potential aspects of global concern and major area of governmental and scientific activities are summarized as in Figure 2. As shwon in Figure 2, governmental authorities are mainly responsible for assessment and management tasks although research contributes mainly as independent information sources of current and future concern. Those two counterparts of course have been working together for long time, generally based on temporal arrangement like committees and/or based on the consultation activities. Although this is already effective mechanism to some purposes, however, an interface function between very different governmental and scientific achievements could have additional advantage to help incorporating more new, in-depth and comprehensive view of sciences to governmental sections effectively.

Expected role of IPCP for global chemical pollution issues

Based on the discussions above, possible examples of the working area of IPCP may be raised as the followings;

(1) To integrate the information of the scientific and technological achievement concerning global chemical pollution. This will include the chemical, biological and related sciences that are to be the basis of the assessment/management works.
(2) To prepare the information of the current and future scientific concern to protect human and ecosystem health, from the global scope.
(3) To show compiled information on the current and future potential of technologies for reduction, destruction and abatement of the chemical pollutants.
(4) To react to the necessary tasks that will help developing the effective global solution.

However, practical establishment of the system should not be easy and step-by-step process from the easier to more comprehensive scheme should be important, to develop the most valuable organization to solve the global chemical pollution successfully.

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