

# Korea Environmental Policy Bulletin

Issue 2, Volume V, 2007

## The Second Framework Plan for Hazardous Chemicals Management (2006 ~ 2010)

### I. Background

In accordance with Article 6 of the 「Toxic Chemicals Control Act」, Ministry of Environment established, in 2001, a Framework Plan for Hazardous Chemicals Control, which was drawn up to be updated every five years. The Framework Plan for Hazardous Chemicals Control intended to create a management plan that deals with toxic chemicals, sets up policy directions, and collaborates with the government, private sector, and the general public.

The First Framework Plan (2001-2005) consisted of a chemicals risk assessment system, risk reduction system, chemicals information system, safety practices such as precautions, comprehensive management system for specific chemicals, enhancement of domestic and international corporations schemes, as well as the establishment of administrative infrastructure, all of which were regarded as the “framework for advanced chemicals management.”

However, current practices are still short of infrastructure for producing experimental data due to the small number of laboratories utilizing Good Laboratory Practices (GLP) and standardized methodologies for hazard assessment of chemicals. There have been attempts to upgrade existing chemicals management practices from ‘hazard-oriented management’ to ‘risk-oriented management’ by introducing the risk assessment system. Nevertheless, in spite of these efforts, measures for media-integrated risk

#### C O N T E N T S

I . Background	1
II . Policy Goals & Implementation Strategies	2
1. Policy Goals	2
2. Principles	2
3. Strategies	4
III . Implementation Plans and Issues	4
1. Secure Basic Information Regarding Scientific Chemicals Management	4
2. Chemicals Life-cycle Risk Management	6
3. Strengthening of the Hazardous Chemicals Safety Management Base	7
4. Establishment of an Integrated Management System for Specific Hazardous Chemicals	8
5. Strengthening of the Risk Communication System	8
6. Introduction of a Registration and Evaluation System for New Chemicals	9
IV . System Reorganization and Financial Support	10
1. Institutional Improvement	10
2. Strengthening of the Management Organization	10
3. Financial Support	11
V . Expected Effects	11

management on the basis of risk assessment results, such as setting up integrated environmental standards, have not been satisfactorily established.

Further efforts were also made to produce, deliver, and integrate information by disseminating basic information regarding chemicals and establishing an integrated information system for chemicals among industries. However, an interactive risk communication system to provide end-users with easily accessible and user-friendly information has not yet been established.

An evaluation of achievements made during the first Framework Plan shows that more attention must be given to unsatisfactory aspects of the plan in order to “establish a domestic advanced chemicals management system.” Doing so should enable the

implementation of new paradigms and specific policies in order to catch up with trends in chemicals management both domestically and abroad.

The second Framework Plan (2006-2010) intends to focus on integrating the existing medium-specific management of air, water, and soil with chemicals management and effective collaboration between related governmental entities. In addition, the second Framework Plan, as a national plan for general chemicals management.

In addition, the second Framework Plan, as a national plan for general chemicals management, shall work in line with “the third Long-term Comprehensive Plan of Environment Preservation (2006-2015)” which is a national plan for environmental conservation.

## II. Policy Goals & Implementation Strategies

### 1. Policy Goals

The goal of the second framework plan for Hazardous Chemicals Management is to “protect human health and ecological systems from the risks caused by hazardous chemicals.” The specific goals are as follows :

- Implement integrated life-cycle management of chemicals based on risk assessment
- Establish an environmental health protection system through receptor-oriented chemicals management
- Enhance the role of “industries” as a major subjects of chemicals management
- Establish a “Risk Communication System” among interested parties

### 2. Principles

The Framework Plan is established based on the following four basic principles :

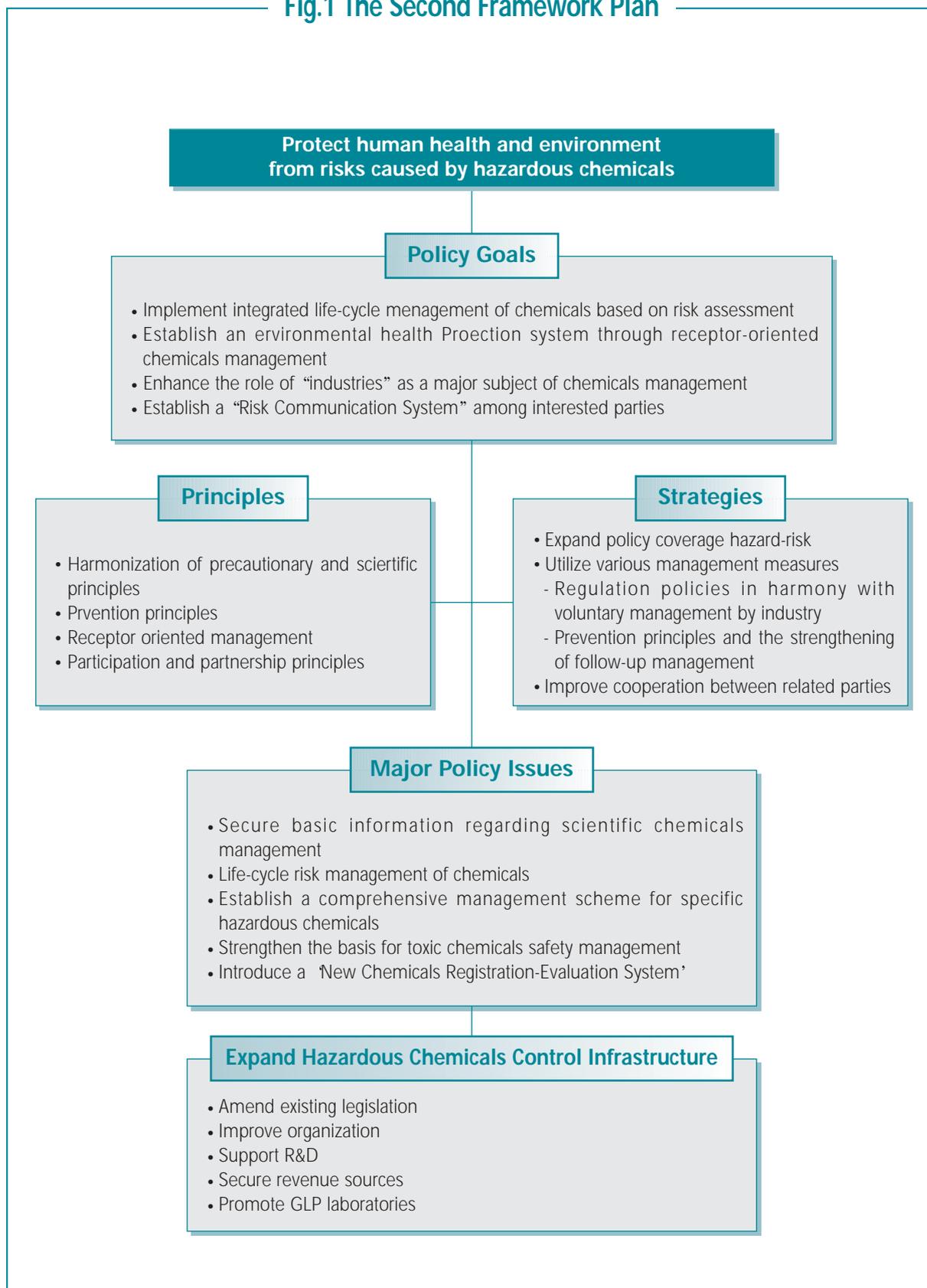
#### 2.1 Harmonization between principles of precaution and of scientific basis

Considering the irreversible characteristics and potential serious damage chemicals can cause, all chemicals are considered hazardous until proven otherwise. Risk assessment for human health and the environment should be firmly incorporated into existing legislation in order to reduce uncertainty in scientific evaluations of risk.

#### 2.2 Prevention

In order to achieve prevention principles, enhanced safety management and exposure reduction throughout the life-cycle of chemicals are required throughout manufacturing, distribution, use, and disposal stages. Especially, exposure reduction during the use stage should be implemented by encouraging the manufacture of less hazardous chemicals and rigorously enforcing safety management during distribution.

Fig.1 The Second Framework Plan



## 2.3 Receptor-oriented management

In line with a desire to improve income levels and achieve healthy and sustainable possibility, a “Receptor-oriented environmental policy paradigm” is being emphasized.

In order to protect human health and environment from the risks posed by chemicals, it is necessary to convert existing systems into risk-oriented management approaches. Thus the framework for the environmental health policy can be established.

## 2.4 Participation and partnership

To improve communication and expand partnerships, policies should be developed based on the active participation of chemical industries, government entities, and the general public. Partnerships should be formed based on informative communication and participation during the decision making process.

## 3. Strategies

To achieve the goals of the framework plan, promotion strategies should include the following three aspects:

## 3.1 Expand policy coverage : hazard → risk

The policy coverage of hazardous chemicals should be expanded to include risk, exposure, and environmental management. The policy should also cover the manufacturing and distribution of raw materials as well as the use and disposal of products.

## 3.2 Utilize various management measures

The management measures where preventative measures, including safety management of facilities treating hazardous substances and information system for chemicals risk, and response measures including enforcement of penalties are coordinated, shall be utilized. In addition, voluntary agreements, such as reductions in hazardous material output should be encouraged to promote the implementation of the policy through the participation of the industries.

## 3.3 Improve cooperation among related parties

To supplement efforts made by Ministry of Environment to protect the atmosphere and water, related government entities and the private sector should cooperate to promote efficient chemicals management. In addition, chemicals-related international standards and agreements drawn up by the OECD and UN should be taken into consideration during revisions to the chemicals system.

# III. Implementation Plans and Issues

The Second Framework Plan for Hazardous Chemicals Management, in line with the goals and strategies above, selected the following six major policies :

- Secure basic information regarding scientific chemicals management
- Life-cycle risk management of chemicals
- Establish a comprehensive management scheme for specific hazardous chemicals
- Strengthen the basis for hazardous chemicals safety management
- Strengthen the communication system to meet social demands

- Introduce a ‘New Chemicals Registration/Evaluation System’

## 1. Secure Basic Information Regarding Scientific Chemicals Management

### 1.1 Goal

For the risk-based scientific chemicals management, information regarding the hazards of exposure of

material to the human body as well as discharge during the process of distribution, is essential.

The current chemicals system has evaluated and produced data on physical chemical characteristics and toxicity to the human body and ecosystem. Based on the results, materials were categorized as toxic substances or substances that need observation, and managed accordingly. In the future, it is necessary to examine the distribution and output of chemicals so as to set the priority of materials that need management and provide basic data according to risk.

## 1.2 Specific Promotion Issues

### 1.2.1 Improvement of the System of Hazard Assessment for New Chemicals

- Establishment of foundation for responding OECD Mutual Acceptance of Notifications(MAN) (2006-2009) through the introduction of an advanced hazard assessment system
  - Items for assessment should be increased to OECD Minimum Premarket Data(MPD) levels, and the forecast data utilization for substitution of tests such as QSAR, should be systematized.
- Strengthening (2006-2007) of follow-up management of the hazard assessment system
  - The 「Toxic Chemicals Control Act」 was revised (Dec. 2004) to strengthen post management such as suspending the distribution of new chemicals which violated the responsibility of record keeping

### 1.2.2 Improvement of existing chemicals hazard assessment system

- Existing chemicals safety tests shall be upgraded to the level of OECD risk assessment (2008-2010)
  - Among existing chemicals, High Production Volume(HPV) Chemicals should be separately examined in terms of toxicity to the human body and ecosystem as well as their exposure and output volume to produce integrated data for Screening Information DataSet(SIDS) risk evaluation levels.
- Cooperation between industry and the government regarding chemicals management (2007-2010)
  - Data on HPV Chemicals should be cooperatively produced by government and industry. The information should be provided to the public by the establishment of an “industries-government

corporate participation program” (HPV Challenge Program of the United States).

### 1.2.3 Domestic infrastructure establishment for scientific risk data production

- Support for GLP agencies (2006-2010)
  - Hazard assessment items should be expanded to induce the market creation of GLP agencies with improved capabilities. For example, hazard assessment items shall be expanded from three items to six items in 2007, and 13 items in 2010 with step-by-step expansion strategies.
- Substantial operation of the integrated GLP system (2006-2007)
  - For the substantial operation of the integrated GLP system, the 「chemicals policy association」 in which related ministries and industries participate, should be reorganized for consistent system improvement.
- Enhancement of the reliability of GLP agencies and production data (2007-2010)
  - To secure reliable domestic data and mutual recognition of test data with advanced countries, a memorandum of understanding should be drawn up.

### 1.2.4 Improvement of distribution investigation system

- Plan for the improvement of survey on chemicals distribution (2009)
  - In addition to the manufacture and production of chemicals, hazardous chemicals included in products should be investigated to secure basic data for product risk assessment.
  - To meet EU Registration Evaluation Authorization and Restriction(REACH) standards, investigation on chemicals and products import/export information should be enhanced.

### 1.2.5 Promotion of Toxic Release Inventory(TRI) and voluntary agreement program

- Strengthen support for TRI-investigated companies (2006-2010)
  - Development and distribution of small and middle entity chemicals output estimate guidance in an effort to promote and support small companies with insufficient capabilities.

- Enhancement of reliability and accuracy of output investigation data (2006-2010)
  - Improvement of non-point source output estimate variables, estimate program improvement, output estimate skills, and guidance.
- Preparation for a workplace output report system (2006-2007)
  - To minimize the burden to industries due to output reporting, and prevent misunderstanding throughout the nation, a rational information report plan should be created.
- Support and management for voluntary waste reduction efforts of companies (2006-2009)
  - This includes waste reduction technologies and information exchanges among companies, rewarding companies with best practices, promoting excellent cases, and constant education efforts.

## 2. Chemicals Life-cycle Risk Management

### 2.1 Goal

Toxic chemicals exist in the environment in very small amounts. These are exchanged and distributed among media such as the atmosphere, water, soil, wastes, etc. By establishing a comprehensive management policy, rather than policies based on each element, all elements shall be regarded in an integrated system to pursue a combined holistic approach. Moreover, specific policies to protect children, pregnant women, and the elderly should be drawn up to protect them against harmful materials. Thus, to implement the receptor-oriented chemicals management policy, a Life-cycle management policy should be promoted.

### 2.2 Specific Promotion Issues

#### 2.2.1 Establishment of integrated risk assessment-management system

- Integrated risk assessment on media (2006-2010)
  - Objects and priorities for the integrated risk assessment should be selected. Detailed assessment should be conducted among regions at higher risk (TRA : Target Risk Assessment).

- Establishment of the integrated risk assessment system on media (2006-2007)
  - By investigating the exposure assessment skills of advanced countries, exposure assessment method and forecast system that can be applicable to Korea shall be developed, and accordingly 「risk assessment guidance」 shall be established (National Institute of Environmental Research).
- Foundation and operation of a coordinating agency for integrated chemicals management (2006-2007)
  - Foundation and operation of a coordinating agency for information exchanges and active association for management policy among chemicals and material-handling entities (T/F).

#### 2.2.2 Protection of consumers through the management of harmful material products

- Development of harmful materials risk assessment methods (2006-2009)
  - Toxicity assessment of the materials within products, toxicity assessment method for finding possible exposure channels and amount of discharge, monitoring methods, exposure scenarios, and exposure evaluation methods should be developed.

- Establishment of risk assessment and management system for products (2006-2010)
  - Securing exposure assessment parameters for hazardous chemicals and establishing a constant monitoring system

- Establishment of cooperative system among industries and related ministries (2006-2007)
  - To manage harmful chemicals, Ministry of Commerce, Industry and Energy, Ministry of Health and Welfare, and other related ministries, industries, and environmental organizations should form an association in order to strengthen partnerships between private and public sectors.

#### 2.2.3 Expanded application of restricted and banned items and strengthened management

- Establishment of an integrated system that designates restricted and banned items (2006-2008)
  - Assessment of current product usage and volume, and identification of restricted and banned items based on risk.

- Establishment of a cooperative system between related ministries (2006-2007)
- Foundation and operation of an association which includes Ministry of Commerce, Industry and Energy, the Korea Consumer Agency, industries, civil organizations, and other related ministries and sectors.

#### 2.2.4 Promotion of children's activity area and policy for reduction of chemicals exposure

- Establishment of a monitoring system for activity areas and products for children to make sure that they are not exposed to hazardous chemicals-containing products (2006-2010)
- Playgrounds, school zones, daycare facilities, and toys shall be carefully monitored for harmful material.
- Children-oriented risk assessment and management strategy (2006-2010)
- Creation of risk assessment methods specially designed to protect children. Procedures shall be established to properly manage activity areas.
- Adoption of a data system that identifies material which is harmful to children and encourages voluntary reduction of the material (2006-2010)
- Companies that manufacture and/or import material and products harmful to children should voluntarily report harmful material risk data and gradually reduce the production and/or importation of such substances (Voluntary Children's Chemical Evaluation Program(VCCCEP) introduction).

### 3. Strengthening of the Hazardous Chemicals Safety Management Base

#### 3.1 Goal

Ministry of Environment currently makes use of a hazard evaluation system to classify chemicals as toxic chemicals, observation chemicals, and common material for efficient management. To strengthen the safety management of toxic chemicals and prevent accidents, potential accident precaution chemicals were recently identified and laws were revised to restrict and banned chemicals based on risk assessment. Further enhancement of existing laws should improve and firmly establish chemicals safety management.

### 3.2 Specific Promotion Issues

#### 3.2.1 Expansion of toxic chemicals management standards and facility management strengthening

- Development of standards for hazardous chemicals and handling facilities (2008-2009)
- Establishment of specific management standards for high risk chemicals in terms of carcinogenicity, acute toxicity, and physical nature.
- Regarding facilities and companies handling large quantities of hazardous chemicals, an appropriate plan should be established to minimize the effects of unexpected discharge caused by fire or other accidents.
- Establishment and implementation of voluntary management standards (2010)
- To encourage voluntary compliance of industries, standards for hazardous chemicals and facilities should be sought.

#### 3.2.2 Establishment of prevention and prompt response systems for chemical accident.

- Strengthen accident response and information system (2006-2010)
- Expansion of nation-wide accident response agencies and 24-hour monitoring centers to provide real-time information (operation of an accident monitoring agency)
- Follow-up management of regions affected by accidents (2006-2008)
- To prevent further damage caused by chemical accidents and evaluate the affectivity of restoration methods, the affected area should be consistently monitored.

#### 3.2.3 Improvement of toxic chemicals classification and labeling system by introducing Globally Harmonized System of Classification and Labelling of Chemicals(GHS)

- Preparation of GHS introduction completed (2006-2007)
- By improving the domestic classification/labeling system, the basis for introducing GHS in 2008 has been established.
- Introduction of the domestic GHS and verification of international accordance (2008-2009)
- A domestic GHS will be implemented in 2008.

Accordingly, active participation in OECD GHS projects should be sought in order to implement the new classification/labeling system and take part in international discussions. Furthermore, newly identified items shall be included in the data for system improvements.

## 4. Establishment of an Integrated Management System for Specific Hazardous Chemicals

### 4.1 Goal

International regulations are becoming tighter for materials with high rates of Persistent Organic Pollutants (POPs) and endocrine disruptors, which are severely hazardous and of high persistency. In addition to dioxins, Brominated Flame Retardants (electronics, etc.), Perfluorooctanoic Acid(PFOA) (food receptacles) and other harmful material directly affecting human health recently became an important social issue. Therefore, a systematic base and integrated management system for specific materials harmful to the human body and environment, such as dioxins, POPs, and endocrine disruptors, should be established.

### 4.2 Specific Promotion Issues

#### 4.2.1 Establishment of an endocrine disruptor management system

- Selection of priority management list of endocrine disruptor (2006-2007)
  - The level of domestic use and exposure was considered during the selection of priority chemicals
- Investigation of appropriate methodologies for monitoring, experiments and research (2006-2007)
  - Through consistent monitoring projects on the environment, domestic pollution levels have been assessed and the basis for assessing the risk of Endocrine Disruptors has been established
  - Participation in international research programs for the preparation of internationally authorized testing methods
- Risk assessment and regulation plan (2008-2010)
  - A risk assessment and regulation plan shall be based on basic data regarding domestic use, international regulations, availability of alternative products, and other applicable data. Limitations

and prohibition may be imposed if deemed necessary.

#### 4.2.2 Establishment of a Persistent Organic Pollutants (POPs) management system

- Establishment of infrastructure for a systematic POPs management (2006-2007)
  - In response to the Stockholm Convention regarding the management of persistent organic pollutants such as dioxins, the 「Persistent Organic Pollutants Control Act」 shall be enacted.
- Plan for the proper management of Polychlorinated biphenyls(PCBs) (2006-2010)
  - By 2015, PCBs will be abolished and environment-friendly PCB waste disposal plans will be established.
- Establishment of environmental standards for dioxins and other POPs (2006-2007)
  - Environmental standards for dioxins will be established based on the results of investigations and risk assessments currently being conducted.

#### 4.2.3 Establishment of a management system for emerging pollutants

- Expansion of basic investigations (2006-2007)
  - Investigation projects regarding Brominated Flame Retardants (BFRs), biocides, and Perfluorooctane Sulfonate(PFOS) shall be expanded.
- Management plan according to the characteristics of each chemicals (2008-2010)
  - Physiochemical characteristics of specific chemicals will be classified and applied to the management plan to minimize risk.

## 5. Strengthening of the Risk Communication System

### 5.1 Goal

Chemicals data is the basis for seeking scientific safety management and providing the nation with risk information. To implement such a system, communication among chemical distributors should be activated first. Information services and education should be designed for the general public, and there should be an interactive communication system for management policy making.

## 5.2 Specific Promotion Issues

### 5.2.1 Strengthening of the communication system regarding chemicals entities

- Improvement of the chemicals industry communication system (2006-2007)
  - In preparation for the introduction of REACH, the current communication system should be improved in such a way that it adds exposure scenarios to the current MSDS. In addition, the quality of information should meet the requirements of REACH.
- Establishment of industry/government information exchange system and follow-up management system (2006-2010)
  - The government should be able to provide industries with information through established discussion channels.
  - Reports and records should be preserved by chemicals industries to confirm accuracy and allow for future reviews.

### 5.2.2 Integration of user-friendly chemicals information

- Establishment of an integrated system for chemicals information (2006-2008)
  - A chemicals information system, both domestic and overseas, should be customized and made accessible to the general public.
- Long-term integrated system for chemicals information (2009)

### 5.2.3 Strengthening of an interactive risk communication system

- Information sharing through education and information provisions (2006-2008)
  - To prepare industry reports (2008) and to avoid misunderstanding, presentations, guidance brochures, and chemical advisory systems should be conducted and established.
- Establishment and operation of interactive communication system (2008-2010)
  - In addition to information dissemination, opinions from various interested parties should also be taken into consideration. Various participation programs regarding policy-making should be sought.

## 6. Introduction of a Registration and Evaluation System for New Chemicals

### 6.1 Goal

Europe's new chemicals management system (REACH), which was enforced in May 2007, requires manufacturers and importers to evaluate the hazards of new and existing chemicals as well as finished products (i.e. articles) for registration and authorization. However, due to complicated procedures, the regulations were expected to cause a burden to the domestic chemicals industry. Thus, in order to conform to REACH, there is a need to improve the evaluation systems that are practiced in advanced countries.

### 6.2 Specific Promotion Issues

- Establishment of a domestic new chemicals registration/evaluation system (2006-2009)
  - A 「chemicals policy association」, which would include members from the chemicals industry, related ministries, and academic circles should be established in order to monitor international trends regarding REACH, share information, and respond cooperatively.
  - Industries should set strategies in response to REACH. They should also be provided with information regarding chemicals registration, procedures, preparation documents, etc. Thus, an 「industries alert system」 should be established.
  - Upon requests by industries at each registration step, a one-stop support service (REACH Response Center) is made available.
- Introduction of a domestic new chemicals registration/evaluation system (2008-2010)
  - New and existing chemicals should be evaluated and registered in terms of the risk. Based on evaluation results, any substance with potential risk should be restricted or banned
  - Among finished products (articles), the ones with high risk potentials, both to the environment and humans, should be evaluated and registered based on the chemical content.
  - The existing Material Safety Data Sheet (MSDS) should include exposure information to enhance information exchange obligations among manufacturers and importers as well as sub-users.

# IV. System Reorganization and Financial Support

## 1. Institutional Improvement

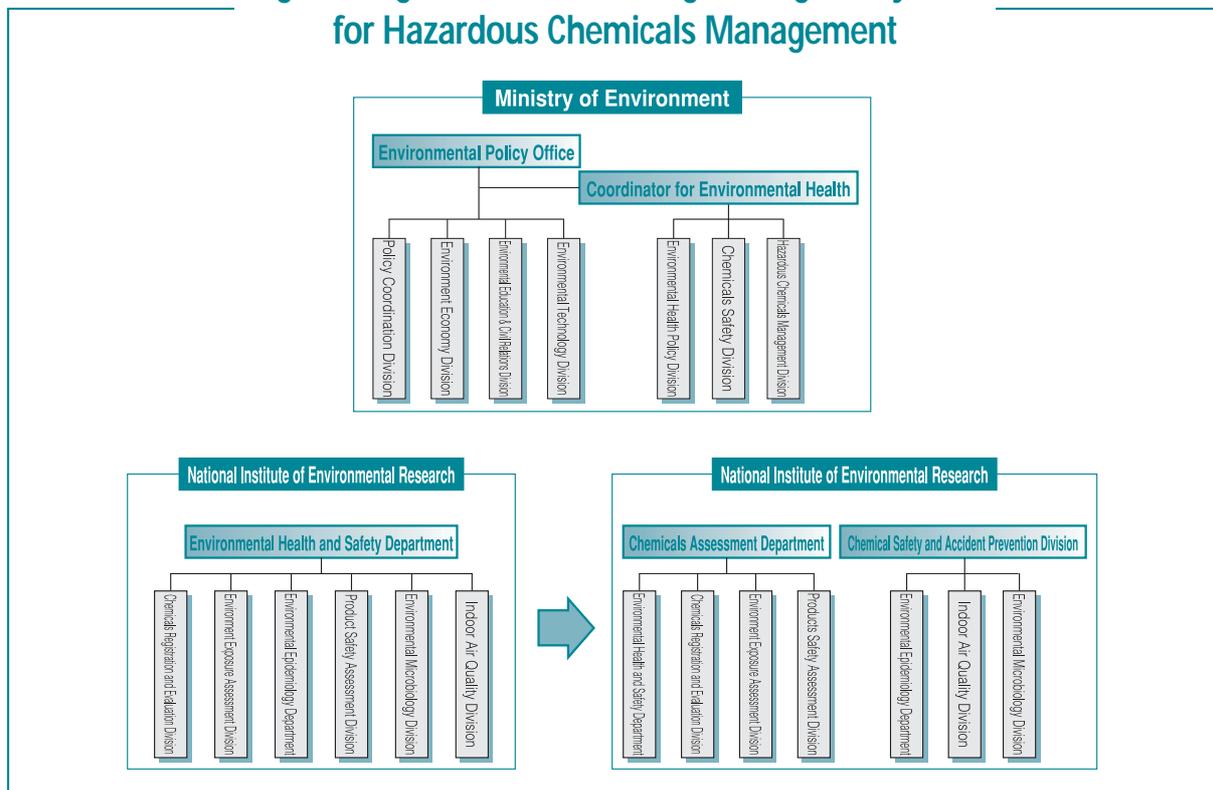
Ministry of Environment, through recent revisions to the law, has established the 「Receptor-oriented chemicals management」 system which includes a risk system as well as a restriction/ban system (General revision of the Hazardous chemicals control Act, Dec. 2004). However, cooperation between the government and industry regarding the process of chemicals production are still needed. In addition, the international eradication of Persistent Organic Pollutants (POPs) was pursued by reinforcing measures agreed upon at the Stockholm Convention (2004).

- Introduction of a new chemicals registration/evaluation system.
- Improvement of information exchanges between manufacturers and importers at the distribution, use, and discharge stages.
- Establishment of 「Persistent Organic Pollutants Control Act」 (2006).

## 2. Strengthening of the Management Organization

Since the first Framework Plan for Hazardous Chemicals Management, capacity building for chemicals management has been developed by Ministry of Environment, National Institute of Environmental Research, and local environmental agencies. However, capacity building for international cooperation, risk assessment, and other chemicals related subjects are insufficient compared to those of advanced countries. No professional agency has been designated to manage facilities that handle toxic substances and take care of the development of hazard test methods. Ministry of Environment has yet to be reorganized to conform to international chemicals management, enhanced international cooperation, or adopt advanced hazard evaluation methods. In preparation for and implementation of the new chemicals registration/evaluation system

**Fig.2 Reorganization for Strengthening the System for Hazardous Chemicals Management**



(2010), the 「environment & health inspector」 has been established by Ministry of Environment. At National Institute of Environmental Research, a division responsible for environment, health, and safety was reorganized and is planned to become the 「chemicals evaluation division」.

### 3. Financial Support

The cost to implement the Second Framework Plan for Hazardous Chemicals Management is estimated to reach KRW 66.9 Billion over five years. In

particular, the funding should be invested more on 1) survey on current environmental pollution levels caused by chemicals, environmental fate of chemicals; 2) for expansion of support for assessing their risk to the environment and humans; 3) for expansion of support for establishment of infrastructure for chemicals management and related research, such as developing exposure assessment tools, and establishing an accident-response system; and 4) for securing related technology and support to establish systematic response mechanism in the industries responding to the strengthening of international regulations such as EU REACH.

**Tbl.1 Expected Budget for Implementation of the Second Framework Plan**

(Unit : 0.1billion won)

Classification	'06	'07	'08	'09	'10	Total
Total	78	118	145	149	179	669
- Securing basic information for scientific chemicals management	10	19	26	31	41	127
- Risk management through assessment of chemicals exposure	37	55	72	75	89	328
- Strengthening infrastructure for Toxic Chemicals safety management	18	25	23	23	29	118
- Establishment of communication system	5	5	8	4	3	25
- Introduction of new chemicals registration/evaluation system	8	14	16	16	17	71

Funding will be made available from chemicals related projects of the 「National financial operation plan」 and 「Eco-technopia 21 project」. Gradual sharing of burdens with industries for chemicals management will be necessary in response to the

existing chemicals hazard evaluation and REACH. For example, the preparation of chemicals safety reports by industry shall eventually realize a “Polluters Pay Principle”.

## V. Expected Effects

The implementation of the second framework plan for Hazardous Chemicals Management is expected to fully establish an advanced chemicals management system based on scientific analysis and research. In addition, domestic and international hazardous chemicals trends, national interests, and information demands will be sufficiently taken into consideration in the development of the new chemicals management system. By establishing an integrated risk assessment/management system, compatibility among medium-specific environmental management

policies for atmosphere, water, soil, etc will be enhanced. In addition, a nation-wide response plan for reducing Toxic Chemicals will be made available through the cooperation among the government, industries, and citizens.

Finally, based on the achievements, ultimate goal of the second Framework Plan, the protection for human health and environment from risks caused by hazardous chemicals can be realized.

*Published by*

**Ministry of Environment**

Government Complex Gwacheon, Jungangdong 1, Gwacheon-si,  
Gyeonggi-do, 427-729, Republic of Korea  
Tel. (822) 2110-6552 Fax. (822) 504-9206

**Korea Environment Institute**

290 Jinheungno, Eunpyeonggu, Seoul, 122-706 Korea  
Tel. (822) 380-7777 Fax. (822) 380-7799

Written by Dr. Yong Seung Shin

Edited by Dr. Hyun-Woo Lee, Yoonmee Lee, and David Matte

