

ENVIRONMENTALLY SOUND MANAGEMENT OF TOXIC CHEMICALS - CHINA

Q.Y. Meng, W.X. Yang and X.B. Xu

Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing, P. R. China

L.J. Sun

State Environmental Protection Administration, Beijing, P. R. China

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Summary

With the improvement of science and technology, and the development of consumerism, there has been an exponential increase in the kind and amount of chemicals. Many of them are toxic, and can cause hazards and potential harm to human beings. At present, it seems that each state has followed the principle that whoever adopts, makes or puts onto the market a new chemical substance will be responsible to prove, with scientific evidence, that the new substance will not bring about adverse influences on the environment or human beings. It is imperative to manage chemicals scientifically. Legislation is an important aspect of the effective management of Chemicals. Each state has modified and improved its own environmental management and legislation for controlling chemicals, according to the requirements of international organizations. The London principles on information exchange in international trade of chemicals put forward by UNEP is an international information exchange project, which includes international trade in pesticides and toxic chemicals. In order to promote Prior Informed Consent (PIC) activities, in 1989, the Chinese government established a project to draft legal regulations for import and export of chemicals. In 1994 after several years of coordination between Economic Cooperation Department of Foreign Trade and General Management of Customs, the State Environmental Protection Administration (SEPA)

promulgated 'Regulations for Environmental Management on the First Import of Chemicals and the Import and Export of Toxic Chemicals'. Other Laws and Regulations include 'The People's Republic of China Administrative Regulations on the Supervision and Control of Chemicals', 'The Guidelines for Experimentation for Environmental Safety Assessment of Chemical Pesticides', 'Administrative Regulations on Pesticides', 'Procedures for the Toxicological Assessment on Safety of Pesticides', 'China's List of Existing Chemical Substances', 'National List of Chemical Substances with Priority in Environmental Management', and 'List of Priority Pollutants in the Environmental Waters of China'.

1. Introduction

With the improvement of science and technology and the development of social consumerism, there has been an exponential increase in the kind and amounts of chemicals. Although the production of chemicals has enriched the material requirements for the lives of human beings, the facts indicate that many chemicals are toxic and harmful. They can bring hazards and potential harm to human beings. Their improper disposal will not only lead to pollution of the eco-environment but could result in harm to human health and potentially immeasurable losses to human beings. So it is imperative to manage chemicals wisely and scientifically.

Legislation is an important aspect of the effective management of chemicals. As early as the 1970s, the developed countries such as USA, Japan and several European countries enacted and modified the environmental regulations on chemicals, and generally tightened up the management of toxic and harmful chemicals. Up to the 1980s, a series of systems of legal regulations on environmental management of chemicals, including compiling names of existing chemicals, the appraisal system for priority management and choice of chemicals, the declaration and registration system of new chemicals, and risk assessment of chemicals, had been generally established. In order to avoid the trade friction caused by difference in management requirements proposed by different governments, and avoid affecting normal international trade in chemicals, the European Economic Commission required its member countries to adopt new common requirements, including a registration system and testing, data exchange, classification, packaging and labelling of hazardous chemicals. In 1989, United Nations Environmental Program (UNEP) put forward 'The London Guidelines for the Exchange of Information on Chemicals in International Trade (1989 Amendment)' and World Health Organization (WHO) also recommended the basic principals of legislation for security of chemicals. Each state then modified and improved its own environmental management and legislation of chemicals according to the requirements of international organizations.

The Chinese government has also taken the management of toxic chemicals seriously and the departments taking part in management include the State Environmental Protection Administration (SEPA), Department of Agriculture, Department of Public Health and Department of Chemical Industry, etc (there has since been some reorganization). In order to strengthen management, a special administrative unit, the Chemicals Registration Center, was established under SEPA. In 1994, SEPA, in cooperation with the Economic Cooperation Department of Foreign Trade and the

General Bureau of Customs, promulgated 'Regulations for Environmental Management on the First Import of Chemicals and the Import and Export of Toxic Chemicals'. In accordance with the regulations, they strictly manage the import and export of chemicals in the 'List of Toxic Chemicals Banned or Severely Restricted in China'.

China has strictly carried out its international obligations. In December 1995, the Department of State issued the 190th Order entitled 'The People's Republic of China Administrative Regulations on the Supervision and Control of Chemicals' to supervise and control related chemicals according to 'The Convention on Prohibition of Chemical Weapons'.

Pesticides are a series of chemicals that are extensively used in China. In May 1997, the Department of the State issued the 216th Order 'Administrative Regulations on Pesticides', to administer the regulation for registration for pesticides, to normalize policies and legal regulations covering production, dealing, employment, etc. of pesticides, and to prevent pesticides from polluting the environment.

2. Management of Harmful and Toxic Chemicals

Harmful and toxic chemicals can be divided into 'Supervised Chemicals' and 'Toxic Chemicals' according to the extent of their harmfulness. Toxic Chemicals include banned chemicals and severely restricted chemicals.

A 'Toxic Chemical', in this sense, is one which will cause harmful effects to personal health and the environment by means of environmental accumulation, bioaccumulation, biological transformation or chemical reactions, or those chemicals that are seriously harmful to human bodies and possessed of potential harm or hazard through contact.

Banned Chemicals refer to those chemicals completely prohibited for all purposes due to their harmful effects to humans and the environment.

Strictly Limited Chemicals refer to those that are prohibited because of their harmful effects to health and the environment, unless their use is authorized for certain special purpose under special conditions.

In 1976 the American government promulgated 'United States Act on the Control of Toxic Substances' and between 1981 and 1989 it was revised ten times.

In October 1973, Japan promulgated legal serial No. 117 'Japanese Act for Controlling the Examination and Production of Chemical Substances'.

In April 1992, the council of EEC promulgated the Seventh Revised [92/32/EEC] Laws, and Administrative Regulations [67/548/EEC] concerning the common classification, packaging and labelling of dangerous substances.

In 1989 United Nations Environmental Program (UNEP) revised their London Guidelines on Information Exchange on Chemicals in International Trade.

Legislation patterns for management of chemicals were proposed by United Nations Environmental Program (UNEP), and basic principles of legislation for the security of chemicals were recommended by World Health Organization (WHO).

All these international documents on the management of toxic chemicals have urged the government of each state to modify and improve its own legislation on toxic chemicals and to establish environmental management regulations according to the requirements proposed by international organizations and the experience of other countries.

2.1. Management of Supervised Chemicals

In December 1995, the Chinese government issued 'Administrative Regulations for the Safety of Hazardous Chemicals and Goods', and in March 1997, the Department of Chemical Industry promulgated the implementing regulations, which contained 66 articles in all. The regulations include measures for special permission for the production of certain chemicals, measures for the management of import and export business, storage, transportation, dealings and use of supervised chemicals, declaration and statistical systems, etc.

In May 1996, the Department of Chemical Industry issued the Eleventh Order listing the names of all kinds of supervised chemicals. The first category of twelve chemicals can be used to produce chemical weapons. The second category, containing fourteen chemicals, can be used to produce precursors for chemical weapons. The third category, containing seventeen chemicals, can be used as the principal raw materials for the production of chemical weapons. The fourth kind is special organic chemicals except for dynamite and pure hydrocarbons.

2.2. Environmental Management of Toxic Chemicals

In 1994, SEPA, in cooperation with Economic Cooperation Department of Foreign Trade and the General Bureau of Customs, promulgated 'Regulations for Environmental Management on the First Import of Chemicals and the Import and Export of Toxic Chemicals'. According to these regulations, all toxic chemicals should be registered for environmental management before they can be imported or exported, and environment management registration should be followed by the Prior Informed Consent (PIC) as laid down by the London principles.

'Regulations for Environmental Management on the First Import of Chemicals and the Import and Export of Toxic Chemicals' contain 28 articles, in six Chapters. They clearly state that SEPA is the government agency responsible for the environmental supervision and management of toxic chemicals. The 'List of Toxic Chemicals Banned or Severely Restricted in China' should be issued by SEPA, and it has established that the state committee for evaluation of toxic chemicals should be organized under EPA, in charge of the comprehensive appraisal of chemicals which qualify for environmental management and registration. No. 140 Notice, issued by SEPA in 1994 promulgated 'List of Toxic Chemicals Banned or Severely Restricted in China (the first group)'. This included 16 toxic chemicals and 11 severely restricted toxic chemicals.

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Bibliography

Art H.W. (1993). *The Dictionary of Ecology and Environmental Science*. Henry Holt and Company. New York.

Cai D.J. (1999). *The Studies on the Environmental Toxicology of Pesticides*. Publishing House of Chinese Environmental Sciences. Beijing

Calow P. (1998). *The Encyclopedia of Ecology and Environmental Management*. Blackwell Science Inc. Malden Maryland.

Department of Policy and Laws Enactment, Ministry of Chemical Industry (1994). *The Comprehensive Compilation of Administrative Regulations for Chinese Chemical Industry*. Chinese Commercial Publishing House. Beijing

Eagleson M. (1994). *Concise Encyclopedia Chemistry*. Walter de Gruyter Berlin. New York.

Gilpin A. (1996). *Dictionary of Environment and Sustainable Development*. John Wiley&Sons, New York.

Gove P.B. (1993). *Webster's Third New International Dictionary*. Merriam-Webster Inc. Springfield Massachusetts.

Institute for Inspection of Pesticides, Ministry of Agriculture (1996). *The file collection of Pesticide Management*. Beijing

Parker S.P., Corbitt R.A. (1992). *McGraw-Hill Encyclopedia of Environmental Science and Engineering (Third Edition)*. McGraw-Hill Inc. USA

State Environmental Protection Administration (1990). *Guidelines for Testing of Chemicals* (Eds. Wanru Zhang and Feng Hong). Chemical Industrial Publishing House. Beijing

State Environmental Protection Administration (1995). *The Selective Compilation of Environmental Regulations of Chemicals in Foreign Countries*. Beijing

Biographical Sketches

Meng, Qingyu (male) was born in 1975. He is a Member of the Chinese Chemical Society. He graduated from Department of Environmental Science and Engineering, Nanjing University in 1997. During his undergraduate years, he majored in Environmental Chemistry and took courses on law as his minor subject. In 1997, he was admitted to Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, as MS Candidate. Directed by Professor Xu, he participated in several projects on the environmental behavior of PCBs, PAHs and other environmental pollutants.

Yang, Wenxiang (male) was born in 1931. He graduated from Department of Chemistry, Peking University in 1953 and was assigned to work in Changchun Institute of Applied Chemistry Academy Sinica until 1978. During this period he was engaged in study polymer chemistry and irradiation chemistry. After that he transferred to work in the Institute of Environmental Chemistry, Academy Sinica,

in Beijing. He worked in the field of organic pollution chemistry and atmospheric chemistry. He paid more attention to study the photochemical reactions of HCFCs, the chemical kinetics of organic compounds with OH radical as well as the sources and sinks of trace gases in China. Recently he has tried to approach problems of the global environment, such as the chemical processes of ozone depletion in Antarctica, the possibility of remediation of the ozone hole etc. He was a visiting research professor at UC Irvine USA in 1985-1986. He was recommended as a member of CACGP from 1987-1995.

XU Xiaobai (female) was born in 1927, In Suzhou City, elected as Academician (Environ.Chemist/Inorganic Chemist), CAS in Nov.1995. She graduated in 1948 from Department of Chemistry, Chiao-Tung University and has been involved in research since then in the Institute of Chemistry of Academia Sinica; Institute of Physical Chemistry, Institute of Applied Chemistry, Institute of Chemistry and Institute of Environmental Chemistry, CAS. She is now Research Professor and Advisor of Ph.D. Students in Research Center for Eco-Environmental Sciences, CAS. She was Visiting Scholar in UC Berkeley, USA 1980-1982 and later made short visits of 2-3 months as Visiting Professor. She is now a member of National Committee of Environmental Monitoring and SGOMSEC Member under SCOPE. She is the editor of some important journals and was the First of three in charge of the Key Project 'Environmental Changes and Ecological Effects of Some Typical Chemical Pollutants' sponsored by NSFC.

After graduation, she worked successfully mainly in the field of Inorganic Chemistry: studies on the preparation and properties of halophosphate fluorescent material for lamps, of high temperature rare earth refractory binary compounds and of some uranium compounds. Since the mid 1970s she has been involved in research into Environmental Analytical Chemistry, Pollution Chemistry and Eco-toxicology of persistent organic pollutants, etc. relating to Energy & Environment, Chemical Safety and Management, and Green Chemistry. She has published more than 160 scientific papers, three Collections of Studies on Toxic Organics and one monograph 'Environmental Changes and Ecological Effects of Typical Chemical Pollutants'. She has been granted 11 S&T Awards by CAS and Our Nation, and has successfully supervised several MS students and more than ten Ph.D. students.

Sun, Lijin, Senior Scientist, Professor, State Environmental Protection Administration.