Panel Discussion "Environmental risk communication"

History of Environmental Education

Taisen Iguchi

Okazaki National Research Institutes, Japan

Environmental education has recently become a theme for comprehensive study. As for when environmental education was originally proposed, we must refer to the Doctors Satoshi Ichikawa and Mitsuaki Imamura's summary from "Invitation to Environmental Education" (Minerva Shobo).

The term "environmental education" was used by T. Pritchard (1948) at the organization meeting of the International Union for the Conservation of Nature and Natural Resources (The World Conservation Union). In Japan, the term was first used in 1970 in the article of the Nihon Keizai Shimbun titled "Environmental Education Promoted by U.S." It was used in the column of "environmental education" included in the section of "President Nixon Pollution Textbook." The term was also used in Masao Ouchi's "Modern Themes for Science Education and Environmental Education" (1972) and Kazuhiko Nakayama's "Environmental Education" (1973). The term was however translated as "education concerning the environment" in the record of the United Nations Conference of the Human Environment (Stockholm Conference held in 1972). At the time, environmental education had taken root as education about pollution, but the term "environmental education" was criticized as an attempt to turn away from the reality of pollution.

Beginning with lead poisoning at Ashio Copper Mine in 1878, environmental problems and environmental conservation prior to the 1970s have included outbreaks of asthma originating from Besshi Copper Min, Annaka Zinc Smelting Plant, and Yokohama, and Minamata disease in Kumamoto in 1956, Minamata disease in Niigata in 1965, itai-itai disease in 1955 and asthma at Yokkaichi in 1959 to 1960. In response to the problems, the Japanese Cabinet decided upon the "Law concerning Conservation of Water Quality of Public Waters" and "Law concerning Regulation of Factory Wastewater" in 1958, "Law concerning Regulation of Soot and Smoke" in 1962 and the "Public Nuisance Countermeasures Basic Law" and "Environmental Standards concerning Sulfur Oxides" in 1967. The Environment Agency was established on July 1, 1971. Elsewhere, the Swedish Environmental Protection Agency was established in 1967, the U.S. Environmental Protection Agency and U.K. Department of the Environment in 1970, and the French Ministry of the Environment in 1971.

Beginning with "Hunting Regulations for Birds and Wild Animal" in 1873, protection of the natural environment in Japan has included the "National Parks Law" in 1931, the "Cultural Properties Protection Law" in 1950 and the "Nature Parks Law" in 1957. The "Natural Environment Conservation Law" of 1972 asserts that "in light of the fact that the natural environment is indispensable for health and cultural life of human beings, conservation of the natural environment must be properly promoted so that the benefits of the natural environment can be widely enjoyed by the citizens of Japan and so the environment can be saved for posterity." The law ties in with the "Natural Environment Conservation Basic Policy" (1973) and the "Natural Environment Conservation Charter" (1974).

The "Declaration of Human Environment" was adopted at the United Nations Conference of the Human Environment in June 1972 (Only One Earth, 114 countries participated at Stockholm Conference). The declaration states: "when we must shape our actions throughout the world with a more prudent care for their environmental consequences. Through ignorance or indifference we can do massive and irreversible harm to the earthly environment on which our life and well being depend. Conversely, through fuller knowledge and wiser action, we can achieve for ourselves and our posterity a better life in an environment more in keeping with human needs and hopes." Concerning environmental education, the declaration states: "Education in environmental matters, for the younger generation as well as adults, giving due consideration to the underprivileged, is essential in order to broaden the basis for an enlightened opinion and responsible conduct by individuals, enterprises and communities in protecting and improving the environment in its full human dimension" Japan and Senegal proposed designating June 5 as World Environment Day. UNESCO is responsible for matters concerning environmental education. The United Nations Environment Programme (UNEP) was established in 1972, the International Environmental Education Programme in 1975, and the International Environmental Education Workshop (Belgrade Conference) was held in Belgrade, Yugoslavia in October 1975, followed by Trends in Environmental Education in 1977, the Belgrade Charter in 1976, the Intergovernmental Conference on Environmental Education (Tbilisi Conference) in the Republic of Georgia of the former Soviet Union in October 1977.

In Japan, the environmental education curriculum basic research team was established in 1974 and an environmental education research group was established in 1977. From 1977 through 1979, official educational guidelines were created. These were: "Importance of Preventing Pollution, National Countermeasures against Pollution," "How Forests Function to Help Preserve the Environment," and "Human Beings and Nature." According to a study conducted by the Japan Environment Association in 1981, 61 to 75% of elementary, middle and high school students knew the meaning of the term

"environmental education," and about half of the students received environmental education as part of their curriculum.

Since 1980, White Paper on the Environment has carried a section called "We Escaped from a Temporary Crisis," and environmental education has also died down. As a global environmental problem, however, the damage and effects are not limited to within a single country. Environmental problems that cross borders and grow to a global scale and environmental problems that require international efforts including advanced countries have appeared. Such environmental problems include for example depletion of the ozone layer, global warming, acid rain, deforestation, decline in wild animal species, desertification, ocean pollution, transfer of toxic waste across borders, and environmental problems of developing countries. Environmental problems that affect life in cities include water contamination from sewage, air pollution from automobile exhaust, increase in waste, noise, vibration, as well as problems caused by our lifestyles, including destruction of the environment by outdoor leisure activities.

The Long-term Environmental Conservation initiative of 1986 states: "Environmental education is needed for young people who will be responsible for environmental conservation in order to cope with environmental problems caused by urban pollution and pollution caused by everyday living activities. We must therefore provide education and information concerning the environment." The 1st Environmental Education Symposium was held in 1988. The Japan Environmental Education Society was established in 1990 and "environmental education guidance data" was prepared in 1991.

As for an environment aimed for by a sustainable society, the United Nations Conference on Environment and Development (Earth Summit) was held in Rio de Janeiro in 1992. "Think Globally, Act Locally" and "Sustainable Development" were bywords of the summit. The concept of sustainable development was proposed at the Stockholm Conference of 1972 and the World Conservation Strategy of 1980. According to the concept, "The correlation of human being and the biosphere will deteriorate until a new international economic order is established and a new environmental ethic is adopted, population growth is stabilized and a model for sustainable development becomes the rule rather than the exception. Conservation of natural resources is a required condition for sustainable development." The World Commission on Environment and Development (Brundtland Commission) on the environment and development was established in 1984. According to "Our Common Future" published in 1987, "Mankind has the power to effect sustainable development. As for sustainable development, the needs of the current generation must be satisfied without future generations losing the ability to satisfy their own needs." The need to convert from an economic system of mass production, mass consumption and mass discarding to the direction of a sustainable economic system has been sought.

The Thessaloniki declaration was adopted at the International Conference on Environment and Society: Education and Public Awareness for Sustainability (Thessaloniki conference) held in Greece in 1997. "In order to achieve sustainable development...proper education and public awareness, along with laws, economy and technology should be recognized as one of the pillars of sustainability. In order to rebuild the entire education system for sustainability, all levels of school education and education outside the school in all countries are included. The concept of sustainability does not apply to only the environment, but to poverty, population, health and food security as well. In accordance with the advice of the Tbilisi Intergovernmental Conference on Environmental Education, environmental education has developed, and a wide assortment of global problems discussed at Agenda 21 and other important United Nations conferences have been taken up. Up to now, environmental education has been treated as education for sustainability.

According to the Central Environment Council report "Future Environmental Education/Training: Aiming for a Sustainable Society," the objectives of environmental education are to "instill concern for the environment, to have people understand their role and responsibility in preserving the environment, and providing people with the desire to participate in environmental conservation activities and the ability to solve problems." It is hoped that this will reduce stress on the environment, form the keynote of circulation, optimize utilization of environmental resources (reduce consumption), and have society voluntarily become better oriented for coexistence with nature while promoting maintenance and recovery of the ecosystem.

Changing the subject, from the history of environmental education, few current problem of chemical substances probably has direct impact on human beings in many cases. On the other hand, however, concerning the effects of chemical substances on wild animals, there is an extreme lack of data, and there are many animals on which experiments cannot be performed. There may also be many animals that may become extinct before we know it. In addition, there are few incidences where the animals are exposed to only a single substance, so we must assume they are exposed to many types of chemicals. When you think about how much we know about familiar animals, it is not as much as you may think. Frogs for example do not ordinarily drink water, but rather absorb it through the skin of the abdomen. What is the mechanism by which they absorb water? It also appears they release water from the back. What is the mechanism by which they do this? There are many questions. Even if you try to find out the effect of chemical substances on wild animals, it would still require research beginning with the most basic aspects. If we teach the need for fundamental research, the fascination of research and the joy of making your first small discovery, we can get the attention of even high school students. Teaching about the fun of science without being worried about getting away from science, I believe, is one part of environmental education.

Chemical Industry's Efforts to Address the Issue of Risk Communication

Kimihiro Iwamoto
Mitsui Chemicals, Inc., Japan

"Chemistry is an agent of value creation", said Professor Noyori, a Nobel winner. It is said that there are over 100,000 synthetic chemicals in existence on earth today. Synthetic chemicals are the substances that are indispensable for modern civilization.

On the other hand, many of these chemicals are, so to speak, a split personality having both useful and harmful properties. Up to the present, humankind have developed wonderful products by making use of those useful properties, making a contribution to advance in civilization.

However, it is regrettable that in the course of the development, there have been some unfortunate incidents caused by synthetic chemicals, such as the occurrence of pollution, incidents having caused damage to consumers, and detrimental effects on the ecological systems. Using these facts as bad examples, the Government has laid down and amended laws and regulations to cope with the realities, and industry has strengthened its efforts to tackle the environmental and safety issues voluntarily.

These past incidents have caused apprehension among consumers worrying that chemicals are substances causing cancer, allergy and environmental pollution. On the other hand, consumers are citing plastics, fiber, soap, detergents and pharmaceuticals as examples of chemicals believed to help make life enjoyable. Consumers are put in a delicate position, being torn between the risks and benefits of chemical products based on chemical substances.

The conception of the risks and benefits of chemical products differ from person to person. Depending on the sex, degree of knowledge and personality, some people place emphasis on the risks, while other people put stress on the benefits, thinking that the risks are small.

Especially, it is said that it is difficult for consumers to accept those risks which they cannot avoid, those risks whose type is not known to them, and those risks which may effect children, no matter how low the risks are.(1981 Fishhoff) The chemicals which are suspected of having endocrine disrupting effects and the chemical products using such chemicals are the very examples of such risks.

To cope with this situation, the chemical industry is taking the following approaches: One is taking a technical approach by taking steps to carry out investigation and research as to the safety of those chemicals which are suspected of being endocrine disrupters, and the other is taking a social approach by giving information to society and exchanging information with society as to how the chemical industry is tackling the issue. With respect to risk communication with society, I will give you an example of how the chemical industry is taking the latter approach to address the issue.

Since 1995, the chemical industry has been implementing responsible care on a full scale, that is, the activity of voluntarily preserving the environment and securing safety as manufacturers over the entire life cycle of chemicals from research and development, manufacture, use and disposal. Dialogue with society is one of the pillars of the activity.

As part of this activity, since 1996, we have conducted dialogues with the local governments and the community in 9 petrochemical complex areas including kashima, Chiba and Yokkaichi (2 to 3 times in each area), dialogues with consumers in Tokyo (6 times) and dialogues with students in Tokyo and Osaka (3 times). These dialogues have been favorably accepted. These dialogues will not produce any immediate results, but we believe the significance of dialogues is to build up mutual trust by holding the dialogues repeatedly.

We also believe the following points are important for making risk communication effective:

- To have a common recognition that communication is a forum in which opinions are exchanged to promote mutual understanding.
- To adopt an approach that will help communicate the truth and lead to correct understanding.
- To build up mutual trust as partners by holding dialogues repeatedly.

"Comfortable Life and Community Developed by Partnerships"

Yuko Sakita
Journalist, Environmental Counselor, Japan

How to cope with chemicals in everyday life - civil society that can solve problems.

Parental generation has an important role in leaving comfortable living environment for the next generations. Besides, it is now also essential for each of us to recognize the importance of global environmental issues. For both citizens, businesses and governments, development of partnerships is needed to promote reviews of our lifestyles and activities with responsibilities.

However, as for "endocrine disruptives," the most citizens feel uncomfortable on them and lack an idea of how to cope with such chemicals. Therefore, we expect the creation of civil society with problem solving abilities for actions based on their own learning, ideas and values.

Increasing uneasiness about the chemicals - but citizens' actions not be followed.

According to the study of "People's environmental awareness and actions," people rated the second their interests on "toxic chemical pollution such as dioxins and environmental hormone disruptors." However, while the understanding of words themselves is deepened, the required practical actions - "environmental assessment, environmental labeling, and environmental reporting" for businesses and governments, and "green-consumers and 3R" for consumers - are not making enough progresses. In such unbalanced situation, the problems remain unsolved with further increasing of uneasiness over the toxics.

Information disclosures, mutual communications and environmental education are required.

In tackling of these issues, it is important to approach with "measures to eliminate vague uneasiness, to promote the understanding of consumers how to cope with the chemicals, and to push them for practical actions."

① Disclosure of specialized information on studies of environmental risk, chemical management by governments and businesses, regulations and laws, and simple measures for laypersons.

② Increased mutual communications between businesses, researchers and citizens to develop trust among them and to reduce the uneasiness of citizens.

③ Implementation of environmental education to familiarize children with nature, to make them aware of wonderful ecological cycle, and to make them acquire the habit of nurturing the environment.

Partnership spirits nurtured by risk communications based on citizens participation and mutual working.

It is important for citizens not only receive one-way information by businesses and governments but use it for taking practical actions. Recently, citizens' independent actions such as environmental NPO can be found in communities, including the sustainable community makings with closer connection among citizens, businesses and governments. Such efforts will develop the partnerships that share the environmental responsibilities. It must be the same in the case of problems of toxic chemicals.

From my experience, it can be said that the mutual understanding has been born among participants in which "it is important for citizens to study issues themselves in the case of problems that do not have confirmed study results on environmental impacts. Based on this, the citizens should decide by themselves how to cope with the problems and practice along with it. "

Development of human resources aiming at environmental community making.

It is important for implementation of environmental education to develop human resources who can communicate specialized information with laypeople and become "a linking person" in partnership type activities. Environmental councilors registered with the Ministry of Environment and local environmental leaders trained by municipalities can serve this role, including in the chemical risk communications. I believe that progresses in the partnership activities will be able to lead to development of more livable community with nicer environment throughout the country.

Environmental education on the elementary school level

Keiko Endo

Yamamoto Elementary School, City of Hiroshima, Japan

Although I have not particularly specialized in or researched environmental education, I have taken certain approaches in the hopes that my pupils would come to share my own interest in environmental problems, if only a little. On this occasion, I would like to comment on the steps I have taken to this end in the classroom, and the resulting response, perception, and action among the pupils.

Intensive activities (in the higher grades)

About five years ago, I began research on instruction in social studies at the primary school where I was then teaching. As I had requested, I was allowed to research sessions on the environment held for all students of single grades.

I began by asking the children walk around their community and observe its environment or having the entire class inspect the condition of the air with nitrogen oxide detecting tubes. The results of these activities were reported to the class for general discussion.

Next, the children broke into groups to study and report on cases of environmental pollution in their own surroundings. In their reports, I had the children take note of practices that were environment-friendly but hard to implement, and had such practices taken up in the ensuing eco-role-playing, which Konoe Fujimura described as a discussion among participants who each play the roles of parties with mutually different standpoints in her book entitled "Practical Manual for Environmental Learning - Learning Through Eco-Role-Playing." The following topics taken up in eco-role-playing.

Group 1:

Theme: "Shampoo our hair no more than once every three days to help preserve the environment"

Roles: consumers, manufacturers, and city hall

Groups 2 and 3:

Theme: "Pull the plug on electrical products in the home as far as possible to help preserve the environment"

Roles: consumers, electric power companies, electrical product manufacturers

After the eco-role-playing session, Mr. Saito, our environmental instructor, gave a talk by way of conclusion.

With this approach, the children showed a level of interest beyond our expectations and avidly took part. After the class, they dutifully pulled the plugs in the classroom when the day was over and otherwise conserved electricity. They also became more diligent about recycling the cartons of milk from the school lunch. Some of them even lectured their families on the importance of not leaving car engines idling. These results gave me a keen appreciation of the value of intensive approaches to environmental education on specific topics.

Ongoing daily activities (in the lower grades)

At present, I teach a class of second graders. One practice that is carried out on a daily basis is the recycling of school-lunch milk cartons. As might be expected, I had to lead the recycling myself when the children were first graders in their first term, but now the children who finish eating first take the initiative, such that the leaders change from day to day.

The cartons are picked up by an outside business that makes visits for this purpose on a volunteer basis, once every term. Until pick-up day, cardboard boxes filled with cartons are piled up in the hallway. When I congratulate the children, telling them their efforts have saved 20 trees for the term, some of them let out cries of joy.

The other day, one child came running into the teachers' room with a milk carton in hand and exclaimed: "Teacher, Look! I found this - somebody had thrown it out in the garbage!" Thanks to the daily recycling, what the children had once considered garbage no longer appeared to be so in their eyes.

Recently, I begun to sense the importance of making children aware of the need to use resources wisely in daily life.

I have also begun to direct their attention to things such as water and electricity, for example. I would like to enhance their environmental awareness by sharing ideas with them in a natural and a patient fashion.

Looking back on my own approaches thus far, it strikes me that ongoing activities on a daily basis are indispensable for practice of the lessons learned during the intensive studies on specific topics.

Promotion of Risk Communication

Kazuhiko Adachi
Ministry of the Environment, Government of Japan

Although chemicals benefit our lives and are indispensable to maintain and improve our quality of life, they also potentially have negative effects on human health and ecosystems via the environment, during use in a many aspects of daily life, as well as in each stage of business activities, from production to disposal. Today the Japanese public has a heightened sense of concern about these environmental risks from chemicals.

In order for society to be safe and secure from environment pollution caused by chemicals, it is essential to share information among the public, industries and the government, and if possible, to take rational actions to reduce environmental risks based on a common awareness of the issues.

Ministry of the Environment, Government of Japan has been promoting, coordinating and providing information about chemical substances, by means of the publication of the “Citizen’s Guide for understanding PRTR data” and by preparing the web contents which contain the database of chemical substances. Furthermore, the homepage of “Risk Communication” which carries relevant information, such as a collection of examples, was established.

Our ministry launched the “Roundtable on Chemicals and the Environment”, last December with the participation of the representatives of the public, industries and the government, to share information on environmental risks from chemicals, and to promote mutual understanding. It was based on the report of the “Wa-no-kuni Conference for a Harmonious and Sustainable Society in the 21st Century”, which was an initiative of the Prime Minister.

The roundtable plays a role of gathering views and desires of various sectors in the society by using the Internet and holding regional forums.

It also dispatches, to the public, industries and the government, information concerning reducing environmental risks and the common recognition, which is agreed upon through the conversations considering these views and desires in the roundtable.

Our ministry developed studying materials for children that encourage the learning of environmental risks of chemicals through playing games. With use of materials, children can recognize the different properties of chemicals (benefits and risks) and their possibility to pollute the environment in each stage from production to disposal and learn a sense of environmental risks.