



International Symposium on Environmental Endocrine Disrupters 2000

Saturday, December 16 - Monday, December 18, 2000

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リスク管理

Risk Management



Material Cycles Society and Controlling Persistent Chemicals

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In order to maintain the integrity of the global environmental and the biological systems in the 21st century, we must aim at "implementing a material cycles society" and "controlling persistent chemicals" simultaneously. Although there is an old saying "he who runs after two hairs will catch neither", I believe that we can not secure the continuous integrity of the environmental and the biological systems unless we run after two hairs, "implementing a material cycles society" and "controlling persistent chemicals". In addition to the subjects focused in this symposium, "dioxin issues" and "endocrine disrupting chemicals issues", we have been also facing many issues such as "mercury poisoning in human", "concerns on exhaustion of energy and resources", "illegal dumping of wastes" and "climate change due to greenhouse effect gases". Most of these issues, which has become clear one after another during the latter half of the 20th century, leads us to doubt if the integrity of the environmental and biological systems can continuously maintained. The answer to these issues or the scenario that brings at least mitigation of the issues is to make "implementing a material cycles society" and "controlling persistent chemicals" possible simultaneously. We may be able to save the environmental and the biological systems only when we run after these two hairs.

Countries all over the world have made various efforts since 1980's when European countries took a leading position in pursuit of a material cycles society. In Japan, hierarchical countermeasures composed of prevention, reuse, recycle, heat recovery, and waste disposal is incorporated into "Basic Law for Material Cycles Society Development" in 2000. Besides this law, a recycling enhancement system is provided as a scheme to promote recycling specific resources such as containers and packaging, household electric appliances, construction material, and food materials. As the prerequisites to the minimum environmental impact, details of the system with regards to material cycles are determined and carried into a society. In such a material re-circulating society, attention must be paid to concentration of chemicals during the material recycling process as well. An example of such incident is the PCB-contaminated Belgian food scandal occurred in 1999. It was reported that tremendous amount of food was dumped due to the meat, egg and their products contaminated with PCB in the recycling process of used edible oil, resulting in the economic loss over one trillion yen. In addition to the economic damage, they faced disastrous conditions where analytical capacity didn't catch up with the various monitoring demands, requiring to a new project using a bioassay. Another example is the environmental pollution problem with organic bromine compounds contained in flame retardant materials. It became clarified that the concentration of polybrominated diphenyl ethers (PBDEs) in the breast milk or in human blood was radically increased in the latter half of 20 century. There has been a concern on the environmental effects by PBDEs added to or reacted with inflammable materials including plastic, synthetic fiber, and rubber to make them to be flame retardant materials, indicating that the waste plastic recycling process is also an important process to be controlled.

International negotiation between governments has been continued aiming at a treaty settlement in order to control persistent organic pollutants (POPs) in the early 21st century. POPs including PCBs and dioxins would be a candidate as one of the controlled chemical products governed by the treaty, which would prohibit intentional production or use of the products, and allow limited use of the products requiring uses with the strict control of the purpose and the duration of tentative use. We may need the inventory setting and development of best available

technologies or emission regulations for unintentional byproducts. And determining toxicity equivalent of the total amount of dioxins and dioxin-like compounds by the bioassay and comprehensively evaluating physiological activities are very important when we develop monitoring parameters of the environment and a material cycles society.

UK Government Activities on Endocrine Disrupting Chemicals

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The scientific evidence surrounding man-made chemical endocrine disrupting chemicals in the environment and possible effects on human health and wildlife is still far from certain. Nevertheless, it is an issue that gives rise to considerable media comment and public concern and is an issue that Governments must address. In the UK, the Department of the Environment, Transport and the Regions (DETR) and other Government Departments and Agencies are co-ordinating research efforts to address the uncertainties. UK has a considerable research programme including studies investigating changes in human reproductive health, the significance of endocrine disruption in fish, invertebrates and top predators, and the environmental behaviour and fate of potential or known endocrine disrupting chemicals. Our arrangement to cooperate with Japan on research on endocrine disruption in the aquatic environment will greatly facilitate efforts in understanding endocrine disruption this environmental medium.

The UK has volunteered to lead the European risk assessment of nonylphenol and bisphenol A because of our concerns about these. The environmental risk assessment of nonylphenol has been completed and agreed at European level resulting in the need for risk reduction measures to protect the aquatic and terrestrial environments. The risk assessment for bisphenol A is expected to be agreed in spring 2001.

Other action on endocrine disrupting chemicals includes the publication, earlier this year, of our Environment Agency's strategy for addressing "*Endocrine disrupting substances in the environment*" in particular the possible impacts of endocrine disrupters in effluents from sewage treatment works.

In December 1999 the UK Government published its strategy on chemicals in the environment "*Sustainable production and use of chemicals: A strategic approach*". This was published in response to a comprehensive review of UK Government's environmental policies on chemicals production and use. The strategy sets out the Government's policies to prevent commercially produced and used chemicals from harming the environment and human health. It aims to achieve:

- the continued reduction of risks presented by chemicals to the environment, while maintaining competitiveness of industry;
- the early phase out of those chemicals identified as being of unacceptable risk to the environment;
- to make full information publicly available on environmental risks of chemicals.

The Strategy also announced the establishment of a UK chemicals Stakeholder Forum to help achieve these aims.

Strategic Programs on Environmental Endocrine Disrupters'98

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The full-scale effort in Japan to deal with endocrine disrupting chemicals began in 1997. The Environment Agency established a team of researchers to study the problem of endocrine disrupters in March 1997. In May 1998, the agency announced its Endocrine Disrupter Strategy Plan SPEED '98 (observations to be added/revised in November 2000) and conducted various types of research based on the plan. The efforts of the Environment Agency over the past three years are to be introduced in this session.

1. Detection of endocrine disrupters in the environment and study of influence of endocrine disrupters on wildlife

- (1) Along with a nationwide survey of detection of endocrine disrupters in the general environment (air, water, sediment, soil, aquatic organisms), priority on those cited by Endocrine Disrupter Strategy Plan SPEED '98 since 1998, the Environment Agency has developed an understanding of exposure routes of and stress placed on the environment by endocrine disrupters, and has assembled data needed for realistic evaluation of environmental risk.
- (2) The agency has conducted a nationwide survey of accumulation of these substances in wildlife. In addition to this, the agency has studied the correlation between endocrine disrupters and abnormalities in the reproductive functions of concerned organisms through blood tests, pathobiological tests, and by studying the forms that endocrine disrupters come in. The agency also plans to conduct studies of concentration of vitellogenin in the blood and exposure to endocrine disrupters in certain parts of the ecosystem starting in 2001 in order to estimate how the chemicals get into wild animals through the environment.
- (3) Since 1998, the agency has conducted a continuous study of the effect of endocrine disrupters on the health of human beings through investigations including measuring concentration of cited substances in some umbilical cords as an index of exposure during the fetal period, as well as a study of variation in weight of testicles and formation of sperm over a number of years. The agency has also studied congenital anomalies such as undescended testes and spina bifida, as well as occurrence of cancer of the testicles.

2. Environmental risk assessment and experimentation/research

- (1) Risk assessment began in 2000 through the Millennium Project. The agency plans to evaluate risk for more than 40 chemical substances over three years. The agency is currently developing test methods, and has already begun risk assessment for eight substances this year.
- (2) The agency plans to establish a section of the National Environmental Research Center for general research of endocrine disrupters (scheduled for spring of 2001) to act as a base for substantial research.
- (3) The Environment Agency has conducted experimentation/research to learn the mechanism of endocrine disrupters on the cellular level and by animal experiments. Research also includes development of biomarkers to identify degree of exposure and effect.

3. Participation in international efforts

- (1) Japan has also participated in developing test methods in cooperation with experts from various countries, primarily under the auspices of the OECD.



- (2) Along with holding an annual international symposium on endocrine disruptors beginning in 1998, the agency has also begun international cooperative research with the United Kingdom.

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