



INTERNATIONAL CENTRE FOR SCIENCE AND HIGH TECHNOLOGY

Aide-Mémoire

Workshop on on “Sustainable Development and Environmental Degradable Plastics”

October 25-27, 2002
Tsinghua University, Beijing, China



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

1. Background

The International Center for Science and High Technology (ICS), is an autonomous institution within the legal framework of the United Nations Industrial Development Organization (UNIDO), with headquarters in Trieste, Italy.

The Centre mandate relates to the transfer of know-how and technology from developed to developing countries. It derives its justification from the perception that a competitive industrial and technological capability cannot be built-up without adequate scientific knowledge and without participating in the development and utilization of new and advanced technologies.

ICS's target beneficiaries are identified among scientists, researchers and technologists within industrial R&D institutions, science-based industry clusters and/or industries with their own R&D facilities. A close cooperation with the industrial sector is sought either through direct interaction or through the provision of services by national and regional R&D institutions. To this aim institutional strengthening and capacity building of selected national R&D institution has been adopted by ICS as a cost effective approach in order to make the required scientific, technical and managerial services available to local industries.

In the present work programme the ICS activities focus on specific sectors within the areas of chemistry, environment, new materials and high technology. In selecting the specific subprogrammes and their related activities, special consideration was given to their relevance in relation to the scientific and technological development of developing countries.

Within the area of Pure and Applied Chemistry, a subprogramme on Environmentally Degradable Plastics is presently being carried out.

Polymers are now widely used in all aspects of modern life. They contribute, to a great extent, to the comfort and improvement of the quality of life. Their importance is based on their unique ultimate properties and flexibility for wide range of applications from simple packaging to heavy construction. Because of their low cost, they have been extensively used for disposable or throw-away packaging and containers.

It is expected that, during the first few years of the 21st century, there will be a 2 to 3 fold increase in plastics consumption in developing countries, due to the rise in materials utilization as a result of increased rate of industrial growth. However, this is also accompanied by a vast accumulation of solid waste and plastic litter which, due to their resistance to biodegradation, have a deleterious effect on the environment as an obvious contributor to pollution.

2. Justification

The production and consumption of polymeric materials for commodity and specialty plastic items have to face all the constraints and regulations already operative to be issued in the near future, dealing with the management of primary and post-consumer plastic waste. In this respect, the production of environmentally friendly polymeric materials should be a strategic option among those available for the management of plastic waste. The competition with presently adopted technologies such as burial in landfill sites, incineration with energy recovery, and mechanical or chemical recycling is expected to be strengthened although it is predicted that all of them will coexist with an appreciable decrease of land-filling practice and the introduction of the concept of prevention that should help to rationalize the production and management of plastic waste. These new degradable plastics should replace the conventional commodity plastics in those segments in which recycling is difficult or economically unfeasible.

Although most of the EDPs' physical and mechanical properties are limited which at present does not allow them to replace fully the mainstream plastics, their potential applications are numerous: textiles, packaging (such as bottles, sacks, bait bags, waterproof egg cartoons, planter bags, kitchen tidies for organic wastes, bubble films, various wrapping films), small and large molded items (pet toys, disposable cups & dishes, pick-nick food sets, pens), emulsions for coatings and pigments, paints, binders for non-woven fabrics, binders for building products, adhesives, hot-melt adhesives, surfactants and many others.

The global issue of plastic waste has promoted a number of actions all over the world aimed to provide adequate solutions and suggestions for minimizing the negative impact of the increasing production and consumption of plastic materials. Many companies in developed countries are working on a development of a wide range of innovative packaging which offer real environmental benefits. .

The concern about environmental issue of plastics application and potential benefits coming out from EDPs resulted in a trend of a formation of formal organizations which would unite the companies and researchers dealing with EDPs, by helping them to spread the information, support the development etc. on one hand and dealing with authorities on the other hand. The most important organizations focused on EDPs should be mentioned such as the European Degradable Polymer Society (EDPS), the Bio-environmentally Degradable Polymer Society (BEDPS) located in USA, the Biodegradable Polymers Society (BPS) located in Japan, and the EU initiatives funded by EC such as the International Centre of Bio-polymer Technology (ICBT) and EU funded projects such as BIONANOPACK, WHEYPOL and the PACKTECH networking.

ICS-UNIDO has focused on the topic of EDPs as one major branch of its activity aiming at spreading the advantages of today's skill in the technical areas of chemistry, environment, and high-tech new materials to developing countries, and to stimulate a

diffusion of harmonic decisions to be taken on the global issue of plastic waste to the benefit of these countries.

The activities consist mainly in organizing a series of workshops and training courses in selected regions all over the world with the main goal to identify and get together specialists, scientists, managers active in the chosen area who would absorb the knowledge provided by the world leading scientists in the field and further spread the know-how within the region. The follow - up would consist in a proposal of common projects, feasibility studies and networking coordinated by ICS-UNIDO.

A Workshop on “Sustainable Development and Environmental Degradable Plastics” has been scheduled to be held in China on October 25-27, 2002 due to the importance of this issue in China. China possesses rather high industrial potential with a great deal of plastics consumption and developed plastics industry. On the other hand, the knowledge on EDPs is still rather limited and the applications are marginal. Therefore the region provides a large opportunity for spreading the EDPs concerning a developed industry and research organizations active in China. Furthermore, the region suffers from rather serious environmental problems among which plastic waste disposal is a closely monitored issue at present and is supposed to be even more important when of the economy the country will improve.

The event will be also used for information of public on the environmental issues related to plastics. It is foreseen that the data on the advanced way of plastics waste disposal represented by EDPs will be broadly spread by newspapers and electronic media and will contribute to the awareness of public of this topic.

3. Site of the Workshop

China was chosen as a site for the proposed workshop. This decision is related to the following reasons :

China has faced the challenge of population explosion and unrestricted exploitation of resources, as petroleum reserve can not match the demand, other alternative ways have to be found to tackle the resource limitation challenge during the development. In the case of China, as the largest developing country in the world, rapid economic development has created a lot of pollution and overexploitation of resources, these problems, if not resolved properly, will eventually affect the global development. In a few years from now, China will become the largest plastic consuming country in the world, therefore, policy has constantly emphasized in sustainable development and environmentally friendly materials. Among them, biodegradable plastics is the focus of governments in various levels and plastic industries. This workshop will bring together experts from overseas and domestic institutions, central government agents and provincial officers from the Environmental Departments and plastic manufacturing industries, as well as multinational companies involved in degradable plastics, to discuss the future development of the biodegradable plastics and, to exchange views on the policy to encourage the biodegradable plastic industries. The 2008 Beijing Olympics will be the target for the use of degradable plastics.

Based on the prerequisites mentioned above, the organization of the workshop will be held in cooperation with the Degradable Plastics Specialized Committee under the China Plastics Processing Industry Association.. Both academic and industrial institutions coming from China will participate in the event. It is assumed that the workshop will be held under the auspices of China Ministry of Environment Protection, 2008 Beijing Olympic Organization Committee and many other Provincial organization involved in setting up plastic deposition policy. The corresponding representatives of various Ministries of China as well as local branches are supposed to be active participants taking part in discussions on various levels.

It is expected that an important part of participants will be from companies. The companies which are involved in activities connected with production or processing of EDPs as well as those which would be considered to be willing to enter this area in near future will be invited.

Tsinghua University is a leading University in the research on chemistry and physics of polymers. It is one of the major Universities in China and have a not of research capacities in engineering. Tsinghua University will be the host of this event.

With a splendid legacy accumulated over the past 90 years, Tsinghua has retained its character and charm while promoting rigorous scholarship research, ensuring academic and educational prestige in China and abroad. The university currently has over 7,100 faculty and staff, with over 900 full professors and 1,200 associate professors, including 24 members of the Chinese Academy of Sciences and 24 members of the Chinese Academy of Engineering.

The educational philosophy of Tsinghua is to "train students with integrity." Among the over 100,000 students who have graduated from Tsinghua since its founding are many outstanding scholars, eminent entrepreneurs and great statesmen remembered and respected by their fellow Chinese citizens. Hence, to study at Tsinghua is the dream of many Chinese youth. Presently, Tsinghua has over 20,000 students, including 12,000 undergraduates, 6,200 master's degrees candidates and 2,800 doctoral candidates.

With strong support from the nation and in the face of unprecedented opportunities, Tsinghua University is poised to become a world-class university in the 21st century. With the inspiring motto "Self-discipline and Social Commitment," Tsinghua is dedicated to the well being of Chinese society.

4. Objectives

The main proposed objectives of the workshop are defined as follows:

To provide participants from China and countries in neighbor to China with updated knowledge and information on recent achievements of research as well as new technologies regarding environmentally related problems in polymer producing, processing and end of life disposal industries.

- To update the scientific and technological knowledge of the participants in terms of the waste management of polymeric materials and to stimulate planning for the minimization of waste generation.
- To provide recent information regarding legal aspects of plastic waste formation and waste disposal management and the role which environmentally degradable plastics can play in the whole system.
- To raise industrial, academic and public concern on the issues of environmental effects of plastics, and to emphasize the positive contributions which manufacturing industries can make including the increased utilization of environmentally degradable polymers (EDPs) in those production segments in which they can play an exclusive role.
- To stimulate international research and technology transfer and enhance international co-operation through possible, joint, or follow-up projects, and feasibility studies by identifying regional R&D centres in developing countries through contacts established with the participants in the workshop, thus giving ICS the possibility for identifying competent academic and industrial centres for future joint ventures for the EDPs development.
- To discuss the requirements of candidate degradable plastics for 2008 Beijing Olympic games being produced by various companies.

5. Workshop Programme

The Workshop Program will include lectures sessions as well as short contributions and exhibitions in the following areas. It will be especially focused on the regional situations in China and industrial developments.

- Role of plastics, plastic waste disposal management and the position of EDPs in China and its neighbor countries
- Recent achievements in production, processing and development of products based on EDPs
- Recycling, recovery, and re-use of plastics - based materials.
- Polymer stability and degradability during processing and utilization
- Plastic waste management
- Plastic technology transfer and the role of ICS
- Economic aspects
- Legislative aspects of plastics waste disposal management.

6. Expected Outputs

- Meeting of about 100 participants from different countries consisting of world-leading experts and scientists will result in an extensive exchange of the knowledge and updated information on various aspects of polymer technology, EDPs production and applications, waste management, economics and legislative aspects with obvious benefits to the local participants.
- Elaboration of a comprehensive report (proceedings) on all aspects and views connected with the production and applications of different plastics focusing on the environmental impact and new evolving technologies.
- Preliminary proposals of follow-up projects and feasibility studies for the implementation of the potential and practical use of EDPs in commodity materials.
- Identification of possible co-operative institutions for future actions and ICS network to promote and diffuse knowledge and awareness on the production and utilisation of EDPs and their role in plastic waste management.

7. Profile of Lecturers

Experts working on synthesis, processing and manufacture of EDPs from industrial and academia and R&D institutions will be invited to present the latest developments in the above fields. Especially, the industries related will exhibit their products and technology to demonstrate the actual application. In addition, some representatives from countries and international associations active in the field will be also present, legal and economic experts may also be invited.

8. Profile of Participants

The Workshop is intended for participants from industry, academia, and research institutions who are actively involved in programs related to EDPs and conventional plastics, plastic applications, solid waste management and recycling. Preference will be given to applicants participating in their countries in programs on research and applications of EDPs.

Each participant is requested to prepare a written contribution on the actual state-of-the-art of polymeric materials production, consumption and waste management in their country, with special emphasis on environmentally degradable plastics.

Representatives from Academics and Industries are requested to prepare a written contribution on the actual state-of the art of polymeric materials production, consumption and waste management in his country, with special emphasis on environmentally degradable plastics. Besides this, the selected participants will be asked to give a lectures on the research going on in the respective countries regarding EDPs, recycling, plastic waste management and related topics.

9. Workshop Materials

- Aide-memoire
- Agenda of the Meeting
- List of participants
- Abstracts of contributions

Relevant written material will be distributed during the Meeting.

10. Workshop Time and Venue

The Workshop will be held on October 25-27 in Beijing Tsinghua University and its Tsinghua Unisplendour International Center, Beijing 100084, China

11. Language

The official language of the workshop will be English. However, if Chinese language is used, simultaneous translation will be provided to all participants

12. Financial/Administrative Arrangements

For a limited number of participants, whose participation in the Workshop is supported by ICS-UNIDO, round-trip air tickets from the airport of departure will be reimbursed by the most direct and economical route. Prepaid tickets can be issued upon request. Living expenses (not exceeding the UN standards) for the period of attendance in the meeting will be covered by the local organization.

Participants will be accommodated in the Hotel Tsinghua Unisplendour International Center in rooms selected by the organizers.

Participants will be requested to bear the cost of all expenses in their home countries before travel abroad, including expenditure for passport, internal travel to and from the international airport of departure in their home country.

Self financed participants or those supported by their institutions will pay for their own tickets and accommodation, the organizers will assist in all the necessary arrangements upon a request by the participants.

The organizers will not be responsible for any of the following costs which may be incurred by the participants while attending the workshop:

- compensation for salary or related allowances during the period of the meeting;
- any cost incurred with respect to insurance, medical bills and hospitalization fees;
- compensation in the event of death, disability or illness;

- loss or damage of personal property of participants while attending the training course.

13. Visa arrangement

Each participant should check whether he/she needs visa. The Organizing committee will provide help if necessary regarding the Chinese visa.

14. Registration and Contact Persons

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