



Swiss Confederation

**REPORT ON  
FINAL WORKSHOP AND TRAINING COURSE  
ON NANO SAFETY IN VIETNAM  
*Hanoi, 5 - 6 May 2016***

## **Organization**

Within the Memorandum of Agreement on "Training and Capacity building to develop pilot projects on nano safety in Vietnam", Pollution Control Department (PCD), Vietnam Environment Administration (VEA) has collaborated with United Nations Institute for Training and Research (UNITAR) to implement some activities for training, capacity building and awareness raising on nano safety for stakeholders, such as organizing workshops, training courses, expert meetings, press conferences..., including the following Final Workshop and Training course on nano safety management in Vietnam:

- Final Workshop on nano safety management in Vietnam was organized on 5 May 2016 at the Army Hotel, Hanoi. There were 48 participants from different Ministries, industries, NGOs, research organizations and universities, and Newspapers. The workshop's purpose is to summarize the activities on nano safety management in Vietnam, share information and experience on nano safety management, and discuss about national priorities on nano safety management in Vietnam.
- Training course on nano safety management in Vietnam was also organized on 6 May 2016 at the Army Hotel, Hanoi with 25 participants, experts from research organizations, enterprises; NANOTEC Thailand and UNITAR experts in order to exchange, discuss, and share information and experience on nanomaterials, nano products and nano safety management to the environment and human health.

## **Opening of the Workshop and Training**

The workshop was opened by Ms. Nguyen Hoang Anh, Deputy Director of Pollution Control Department (PCD), Vietnam Environment Administration (VEA). She emphasized that in Vietnam, nanotechnology has been applied in many different fields such as in agriculture, environment, construction, medicine, electronics and energy. Along with Vietnam's economic socio characteristics and the advantages, nanotechnology is expected to develop extensively and comprehensively in the near future. Conversely, nanomaterials have potential risks to the environment and human health, given nano particles can cause mutations and destroy to the DNA structures; nano particles are easily absorbed by the human body, animals and plants, and they can pass through biological membranes, cells, tissues and organs.



According to Ms. Nguyen Hoang Anh, in Vietnam, the research and application of nanotechnology, nanomaterials and nano products is one of the Government's priorities to develop. Therefore, society must pay attention to nano safety. Due to the properties of nanomaterials, it is necessary to have specific provisions to meet management requirements to protect human health and the environment.

The workshop was a forum for managers, researchers and scientists to discuss the evaluation and assessment of risks from the production, use and disposal of nano products, and the potential impacts to human health, ecosystems, animals, plants and the environment. Thereby, they will support the manufacturers, importers, distributors, authorities in local and national level, and the consumers to have the basic knowledge and adequate awareness on nanotechnology and nanomaterials to take the appropriate preventive measures.

Additionally, the training course helped the agencies and scientists to take advantage of the experience of advanced countries in the region such as Thailand and South Korea. This will assist in making long-term plans and investments in basic science research and the application of nanotechnology in some key sectors, control the import, use and disposal of nano products. This will serve to prevent the harmful effects of nanomaterials on humans and the environment.

## **FINAL WORKSHOP - 5 May 2016**

### ***Presentations***

1. Mr. Vu Tat Dat, Deputy Head of Division of Pollution Control for chemicals, environmental incident and environmental health, PCD presented summary activities on nano safety in Vietnam, focusing on existing regulations relevant to management of nanotechnology and national research.

2. Mr. Luu Manh Quynh, Vietnam National University (VNU) of Science, presented on scientific research and application of nanomaterials in Vietnam. He introduced nanotechnology and nanomaterials, and statistics on research. He also explained the definition and existing status of nanomaterials. With the outstanding advantages such as the size of biological molecules, large surface area, the new physical properties, the strong interaction at molecular level, and materials expending reduction, nanotechnology has been used in many different areas including agriculture, catalysis, biomedicine, energy, environment, and surface treatment.

Mr. Quynh also listed some research of nanotechnology application in Vietnam which were based on the reports of 2 workshops on nano and the national projects. About 100 nano products in the Vietnam market are listed to emphasize the application of nanotechnology in different fields in the everyday life.



3. The presentation “Process of research and production of nano products” was presented by Ms. Nguyen Thi Ha from Bacson Investment and Development Joint stock Company. Ms. Ha introduced silver nanotechnology and multinano-technology. According to Ms. Ha, the company has widely applied the silver nanotechnology (nano silver) in different fields, such as N200 Pro product with the best features are extremely strong ability to kill bacteria and environmental friendliness. Multinano-technology has been applied to add the nutrients for plants and animals in order to increase agricultural productivity.

Currently, some the company’s nano products has been tested and certified on safe and effective characteristics, such as: Certification on safety standards for beverage products with nano silver solution by Quality assurance and Testing Center 1 (Quatest 1), Directorate for Standards, Metrology and Quality; Certification on effectiveness of products for cotton with nano silver, cloth with multi-nano (Ag, ZnS, ZnS/Mn), nano silver solution by some agencies under the Ministry of Health.

In addition, Ms. Ha also presented about the product research and distribution process, from research in lab to production, testing the product specifications, the bottling of the products and then distribution. The company has built models in the localities in order to test effect and safety of nano products on objects, such as seafood (Bac Giang, Nam Dinh), crops (Hoai Duc - Hanoi) and poultry (Son Tay - Hanoi)...

4. The presentation of Mr. Luu Manh Quynh, VNU University of Science “Chemical/nano materials risk and environment health intervention” emphasized the definition and need of nano safety. In the presentation, Mr. Quynh showed off some research on nanotoxicity, such as: Research of the effects of nano titanium dioxide (TiO<sub>2</sub>) on the survival of water beetles, and juveniles; the effects of concentration of Ag<sup>+</sup> ions, nano AgCl and silver nano particles on cell death; the effect of carbon nanotubes (CNTs) on the health (CNTs experiment by inhaled on mice lungs at concentration of 02 mg/head); and the effects of nano concentration on the germination of seeds. All of the research showed that the exposure and using a certain quantity of nanomaterials will impact negatively on survival and health of an organism.

Mr. Quynh also presented research of the current state of nano safety in the world and in Vietnam. According to Mr. Quynh, some regional countries concern about ethics, sustainability, health, environmental safety and national security when researching nano technology and nanomaterial. European countries are interested in safety issues for nanotechnology-based features. Therefore, Vietnam should enhance awareness activities for the relevant stakeholders. Moreover, the study and assessment of the safety of nanomaterials’ applications will create prerequisites to bring nanotechnology to fruition safely, quickly and reasonably.

5. Ms. Nguyen Hoai Phuong, Institute of Materials Chemistry, presented on



Assessment of the current state of nano safety management and recommendations for national priorities on nanosafety in Vietnam. She focused on the harmful effects of nanomaterials on the environment and human health, and relevant studies and surveys. Currently, research and surveys on the effects of nanomaterials on the environment and human health in Vietnam has not been sufficient due to lack of awareness of the importance of nanosafety, as well as financial mechanisms, and human resources for research...

Vietnam also has a number of indirect regulations relating to the production and use of nanomaterials, such as: Law on Environmental Protection 2014; Law on Chemicals 2007; Law on High Technology 2008 (item c of Article 5 regulated new material technology is high technology for investment and development priorities); Decree No. 80/2010/ND-CP dated 14 July 2010 of the Government regulated on cooperation with foreign investors in the field of science and technology; Decision No. 127/QĐ-TTg dated 20 January 2011 of the Prime Minister approved the detailed planning on developing radiation application in industry and other technical and economic sectors (including metal nanomaterials, nano composites used in industry, agriculture, health care, and cosmetics) by 2020; Decision No. 2457/QĐ-TTg dated 31 December 2010 of the Prime Minister approved the national program for development of high technology by 2020; Circular No. 02/2001/TT-BKHCM dated 15 February 2001 of the Ministry of Science, Technology and Environment guiding the standards of industrial projects which to be encouraged for investment on the production of new materials, rare materials; application of new bio-technology; application of new technology for the production of communications equipment, telecommunications, environmental pollution treatment or treatment and processing of waste...

However, at present there is no standards and technical regulations on safe thresholds for nanomaterials, as well as the direct regulations related to the nano safety. Due to many producers and distributors, and consumers' limited awareness of nano safety, it is necessary to set the objectives of developing a nano safety policy in Vietnam until 2020. Ms. Phuong also proposed some measures on mechanisms, policy, economics, science and technology to achieve the above objectives.

### ***Discussion***

The participants discussed and gave opinions on various issues in the development and application of nanotechnology, and safety issues.

Mr. Nguyen Manh Hung - Vietnam Standard and Consumers Association told that he has satisfied with the workshop. He recognized the urgency of nano safety issues for consumers in the future. He also hoped that through the workshop, the policy makers and the scientists will have the scientific research on nanotechnology and issue feasible policies and regulations to help consumers to use nano products safely.



Mr. Nguyen Quoc Khanh - Vietnam Chemicals Agency, MOIT pointed out managers need to have the basic and long-term vision on nano field. The policies and regulations should not only apply to nanotechnology to develop the economy, but also to protect human health and the environment from adverse effects. Therefore, it is necessary to assess the impacts, develop the policy and strategy to ensure the objectives of sustainable development of nanotechnology.

Ms. Le Thi Hien - Hanoi University of Engineering and Technology presented that because of the outstanding features, nanotechnology is applied in many fields in Vietnam. However, besides the advantages, this technology also has got many potential risks which have not been researched yet in Vietnam as well as in the world. Many companies in Vietnam have also launched products applied nanotechnology and told that they are environmentally friendly, but there is only a small number of products are certified on safety and effectiveness. Therefore, the Government needs the human and financial resources to do the research, synthesize the information, and develop the standards and technical regulations on thresholds of nano safety, and orient to develop the regulations on new technologies in general and nanotechnology in particular.

Mr. Huynh Tan Dat - Plant Protection Department, Ministry of Agriculture and Rural Development gave the opinion that there was a little nano product applied nanotechnology in plant protection area. He hoped that environment managers would develop effective cooperation with the relevant agencies/ministries to do the research and propose the suitable management for nano products in this field.

Mr. Lai Trung Tung - Kangaroo Institute of Technology and Applications said that Kangaroo Group is applying nanotechnology to many household products such as water filtration products. However, Mr. Tung commented on the inadequacies in nano safety management when Vietnam has no regulations and standards on threshold of nanomaterials. This is difficult to reduce and eliminate nano products which caused adversely affects to the environment and human health, and to warn consumers, public information about the products for consumers to choose the right product. Therefore, he hoped that managers and scientists will soon develop the regulations on thresholds of nano safety when applying nanotechnology in products.

Mr. Truong Manh Thang - Center for Environmental Training and Communication offered some opinions: Products using nanotechnology in the Vietnam market are quite popular. However, the awareness of the technology is still low. Besides the advantages, the users should know more information on impacts of nano particles, and the important considerations in choosing and using the nano products safely. It is necessary to improve public communication to enhance the awareness of the



technology. The relevant agencies, especially PCD/VEA should have more activities to promote awareness of stakeholders including producers and community members on nano safety. At present, most people's perceptions of nanotechnology are positive, with little awareness of the adverse impacts. Therefore, balancing their awareness is very important.

Mr. Le Ngoc Thuan - Hanoi University of Natural Resources and Environment recommended developing thresholds of nano safety for nanomaterials. He proposed the individuals and enterprises should support and cooperate with the scientists to do studies on the nano safety in products.

Mr. Tran Dinh Trinh - VNU University of Science shared his experience on nano field in the French Atomic Energy Commission. Mr. Trinh has confirmed that Europe has not yet researched human safety thresholds, and there are not regulations and standards for each nanomaterial, nor specific thresholds for the various nanomaterials. Mr. Trinh said that Vietnam should be aware of the concept, definition of nano, and use the research results in the world to be able to find standards of safety threshold for nanomaterials.

Overall, the participants felt that it is necessary to improve capacity by cooperation with experts and scientists, especially international, experienced researchers. Also, to keep up to date with high quality equipment and techniques for research, and applications of nanotechnology.

## **TRAINING COURSE - 6<sup>th</sup> May 2016**

### ***The Presentations***

1. Dr. Sirasak Tepakum, Deputy Director of Thailand NANOTEC presented Nano safety Initiative in Thailand. He gave the potential risks of human exposure to nanomaterials. He also provided background on nano safety management in Thailand, such as strengthening communication measurements aimed at raising awareness of the public on nano products, nanoQ labeling, developing legal systems and national strategic planning framework on nano safety.

2. "Thailand Experiences: International collaboration and networking of Nano safety" was presented by Mr. Ramjitti Indaraprasirt, NANOTEC. He introduced the Center and emphasized the importance of international cooperation on nano safety aimed to achieve commitment on human resources, financing and infrastructure, such as: Holding successfully the Asia-Pacific Technical Conference on nanotechnology and manufactured nanomaterials; cooperation with the European Commission on nano safety issues; cooperation with the OECD working group on nanomaterials



production (OECD WPMN).

Furthermore, Mr. Ramjitti introduced the expected activities of the international network in the future, such as: Complete the Agreement among NSTDA and FP7; Thailand would take part in the OEWG to prepare for ICCM5 in 2020; join in the meetings in preparation for ICCM5; take part in and provide information on nano safety in the meetings of OECD in Paris, France in September 2016; ensure the project implementation according to the NANoReg; take part in the Forum organized by ProSafe and OECD in Paris in November 2016.

3. The presentation on the Role of NanoQ Certification of Dr. Tanakorn Osotchan, Mahidol University has shown on the nanoQ is applying in Thailand, the condition and process of certification of nanoQ. NanoQ is developed to improve the awareness, the belief of the consumers on nano products, and ensure the sustainability of nano products and nanotechnology.

4. Dr. Georg Karlagnis, UNITAR introduced the topic Overview of UNITAR's activities related to nanotechnology and manufactured nanomaterials, as a SAICM emerging policy issue. Dr. Georg Karlagnis introduced contents of resolutions of 2009, 2012, 2015, and SAICM's orientation on nano and waste until 2020. He also shared the work and experiences of UNITAR in nano, such as regional workshops, national projects, and an e-Learning course on nano safety. He presented the guidelines to develop a national nanotechnology policy and programme. Furthermore, he introduced the upcoming plans of UNITAR in the nano field: the e-Learning courses on nano in 2016; UNITAR is designing and developing an information database and communications' system for nano experts; and the series of regional workshops in 2017 and 2018, which are funded by Switzerland.

5. Mr. Vu Tat Dat, Deputy Head of Division of Pollution control for chemicals, environmental incident and environmental health, PCD has the presentation of the National priority activities on nano safety in Vietnam and further opportunities for collaboration. The presentation showed on the objectives of nano safety in the period 2015 - 2020 and vision to 2025. He also proposed the main tasks to get the above objectives, such as: improve the policies and regulations on nano safety; do the research, transfer and application of technologies to control and treat nano pollution as well as raise awareness and responsibility for nano safety.

### ***Discussion***

There were 3 experts from Thailand NANOTEC and Mahidol University presenting in the training.



The experts and trainees shared their experiences and discussed nano management and manufactured nano products in Thailand, and the support for Vietnam in this field. The discussion also focused on the impacts of nano on the environment and human health, the nano risk when the nano particles penetrate in the human body and across generations. In addition, they talked about the development of the national policies as well as the regulations, and standards on nano safety.

Dr. Sirasak Tepakum, Deputy Director of Thailand NANOTEC said that Thailand has just applied the American Association of Textile Chemists and Colorists (AATCC) for nano, but there is not any standard and technical regulation on nanomaterials. Moreover, the nanoQ labeling for nano products in Thailand is being applied effectively in nano safety management.

Ms. Bui Thi Luyen - Dupont Paint Company presented that in Vietnam, the regulations on labeling is put on the legal documents. However, there is not the regulation and guideline of nano products labeling. After studying and developing the regulations and standards of nanotechnology, the Government should promulgate the technical guidelines of labeling for this one. The activities not only provide the information for the users but also enhance competition among different products and companies.

Ms. Nguyen Thi Thu Trang - Institute of Environmental Science and Engineering suggested that the Government should assign an agency to lead the other related authorities to study and synthesize the information about nanotechnology as well as distribute funds and support training to improve the human resources. The funds can be called from sources of international cooperation, the government and the enterprises in nano products. To get these above funds, the Government should develop and promulgate regulations and financial mechanisms, as well as raise awareness for manufacturers and users on nano field. The Government and manufacturers should understand that management and implementation of nanotechnology safely and transparently will promote the development, therefore the research, assess and promulgate regulations on nano are really necessary.

Mr. Nguyen Hoang Nam - Vietnam Japan University presented that nano safety is an essential issue given nano products have started to boom in the Vietnam market, where it is easy to import foreign products. Therefore, the Government needs to improve the establishment of policies and regulations on nano safety, including collecting international information, conducting research on nano safety thresholds to propose a nano safety index when applying nanotechnology. These activities require the close cooperation among the authorities, especially enterprises. In order to





encourage and support enterprises to produce safe products, the Government should develop the suitable mechanism, policies and regulations, ensure safety for workers and their benefits, and create conditions to develop products sustainably.

Dr. Georg Karlaganis - UNITAR presented online and discussed with the meeting participants by Skype. He explained the development of national policies on nano safety and expressed UNITAR's readiness to support Vietnam in the field.

A representative of PCD presented the future plan in Vietnam is to establish a network to share information on nano. At present, Vietnam is developing the policies/regulations on environmental health, including nano safety. Therefore, Vietnam would benefit greatly from the support of NANOTEC and the international individuals and organizations in the nano safety.

At the workshop, the participants have also concerned about the roadmap of nano safety management in the next years, especially the specific requirements to achieve the objective. Ms. Nguyen Hoang Anh, Deputy Director of PCD emphasized that due to the above disadvantages and challenges, Vietnam will initially develop the policy on nano safety management till 2020 and continue to complete the activities by 2025.

The all participants showed that the development of the policy on nano safety management by 2020 is a big objective, so it is necessary to take specific resources and roadmap to implement. Vietnam should consider the existing national resources as well as cooperate with the international organizations to develop a feasible roadmap in order to protect the human and environment from the nano pollution.

They also stated that nanotechnology is the new area, and the relating information and data system remain many problems. Thus, to develop the policy on nano safety management, it requires the close cooperation among the relevant Ministries, agencies to implement the specific roadmap feasibly.

The participants have proposed the following objectives and specific periods to be considered for a step by step implementation:

Period 2015 - 2020:

- (1) Synthesize and assess the information of the market, the current state of using nano products, and orient to manage nano safety in Vietnam (bigger scale than this current activities);
- (2) Survey the current state of production, transportation, storage and disposal of nanomaterials;
- (3) Research and synthesize the international technology and experience to orient control and treatment of nano pollution for environment and human health;
- (4) Assess risk of nanotechnology/nanomaterials.

Period 2020 - 2025:



**Pollution Control Department (PCD), Vietnam Environment Administration (VEA)**

- (1) Research and develop the regulations and national standard system on nano safety threshold for some selected manufacturing sector;
- (2) Develop the national database on nano pollution;
- (3) Disseminate to raise the awareness and responsibility for the nano safety;
- (4) Cooperate with international organizations, agencies and mobilize the resources for nano safety management.

The participant also suggested that a priority activities should be developed to make Nano safety program of Vietnam to be more feasible.



**AGENDA FOR FINAL WORKSHOP AND TRAINING COURSE  
ON NANO SAFETY IN VIETNAM**

*Hanoi, 5 - 6<sup>th</sup> May 2016*

<b>Time</b>	<b>Activity</b>	<b>In charge</b>
<b>Day 1 (5<sup>th</sup> May 2016): Final Workshop</b>		
08:30 - 09:00	<i>Registration</i>	Pollution Control Department (PCD)
09:00 - 09:10	<i>Opening and introduction</i>	Representative of PCD/ Environment Administration (VEA)
09:10 - 09:30	Summary activities of the nano safety in Vietnam	Mr. Vu Tat Dat, PCD
09:30 - 10:00	Scientific research and application of nano materials in Vietnam	Mr. Luu Manh Quynh, VNU University of Science
10:00 - 10:30	<i>Tea break</i>	Participants
10:30 - 11:00	Process of research and production of nano products	Bacson Investment and Development Joint stock Company
11:00 - 12:00	<i>Discussion</i>	Participants
12:00 - 13:30	<i>Time for lunch</i>	Participants
13:30 - 14:40	Chemical/nano materials Risk and Environment Health intervention	Mr. Luu Manh Quynh, VNU University of Science
14:40 - 15:20	Assessment of current status of nano safety management and recommendation national priorities on nano safety in Vietnam	Ms. Nguyen Hoai Phuong, Institute of Materials Chemistry
15:20 - 16:00	<i>Tea break</i>	Participants
16:00 - 16:50	<i>Discussion</i>	Participants
16:50 - 17:00	<i>Closing</i>	PCD/VEA
<b>Day 2 (6<sup>th</sup> May 2016): Training course</b>		
08:30 - 09:00	<i>Registration</i>	Pollution Control Department (PCD)
09:00 - 09:10	<i>Opening and introduction</i>	Representative of PCD/Vietnam Environment Administration (VEA)
09:10 - 09:45	Nanosafety Initiative in Thailand	Dr. Sirasak Teparkum, NANOTEC



09:45 - 10:15	<i>Discussion</i>	Participants
10:15 - 10:30	<i>Tea break</i>	Participants
10:30 - 11:00	Thailand Experiences: International collaboration and networking of Nanosafety	Mr. Ramjitti Indaraprasirt, NANOTEC
11:00 - 12:00	Roles of NanoQ Certification	Dr. Tanakorn Osothchan, Mahidol University
12:00 - 13:30	<i>Time for lunch</i>	Participants
13:30 - 14:00	<i>Discussion</i>	Participants
14:00 - 16:00	1. Overview of UNITAR's activities related to nanotechnology and manufactured nanomaterials; 2. Presentation on the IOMC toolbox ( <i>Sky presentation</i> ) 3. Discussion	Dr. Georg Karlaganis, UNITAR
16:00 - 16:15	<i>Tea break</i>	Participants
16:15 - 16:30	National priority activities on nano safety in Vietnam and further opportunities for collaboration	Mr. Vu Tat Dat, PCD
16:30 - 16:50	<i>Discussion</i>	Participants
16:50 - 17:00	<i>Closing</i>	PCD/VEA



**LIST OF THE PARTICIPANTS OF FINAL WORKSHOP**

<b>No</b>	<b>Name</b>	<b>Workplace</b>	<b>Gender</b>
1	Nguyen Hoang Anh	Deputy Director of Pollution Control Department (PCD), VEA	Ms
2	Vu Tat Dat	Deputy Head of Division for Pollution Control for Chemicals, environmental incidents and environmental health of PCD, VEA	Mr
3	Nguyen Quoc Khanh	Official, Vietnam Chemicals Agency (VINACHEMIA), Ministry of Industry and Trade	Mr
4	Le Thi Hien	Officer, University of Engineering and Technology, Vietnam National University	Ms
5	Nguyen Thi Van Anh	Officer, Center for Consultancy and Environmental Technology, VEA	Ms
6	Nguyen Manh Hung	Officer, Vietnam Standard and Consumers Association (VINASTAS)	Mr
7	Huynh Tan Dat	Official, Plant Protection Department, Ministry of Agriculture and Rural Development	Mr
8	Nguyen Thi Ha	Officer, Bacson Investment and Development Joint stock Company	Ms
9	Vu Van	Reporter, Environment and Natural Resources Newspaper, Ministry of Natural Resources and Environment	Ms
10	Nguyen Van Thang	Officer, Vietnam Cleaner Production Centre	Mr
11	Do Quang Trung	Officer, VNU University of Science	Mr
12	Nguyen Ba Dung	Officer, Hanoi University of Natural Resources and Environment	Mr
13	La Tran Bac	Official, Department of International Cooperation, Science and Technology, VEA	Mr
14	Nguyen Thi Thu Trang	Officer, Institute of Environmental Science and Engineering	Ms
15	Nguyen Thu Hang	Reporter, Vietnam News	Ms
16	Nguyen Thi Hoai Phuong	Officer, Institute of Materials Chemistry	Ms
17	Le Ngoc Thuan	Officer, Hanoi University of Natural Resources and Environment	Mr
18	Truong Manh Thang	Officer, Center for Environmental Training and Communication, VEA	Mr
19	Nguyen Sy Khanh Linh	Officer, National Institute of Labour Protection	Mr
20	Chu Xuan Quang	Officer, Institute of Technology Application	Mr
21	Bui Khac Tu	Officer, Vietnam Cleaner Production Centre	Mr
22	Tran Dinh Trinh	Officer, VNU University of Science	Mr
23	Lai Trung Tung	Officer, Kangaroo Group	Mr
24	Luu Manh Quynh	Officer, VNU University of Science	Mr
25	Nguyen Hoang Nam	Officer, Vietnam Japan University	Mr
26	Le Thanh Lam	Officer, Mediplantex National Pharmaceutical	Mr



No	Name	Workplace	Gender
		Joint Stock Company	
27	Pham Tien Thanh	Officer, Vietnam Japan University	Mr
28	Luu Van	Reporter, Newspaper of Enterprise Forum	Ms
29	Ha Thi Bich Hanh	Officer, Mediplantex National Pharmaceutical Joint Stock Company	Ms
30	Dao Manh Phu	Officer, Center for Environmental Monitoring, VEA	Mr
31	Nguyen Quoc Khanh	Director of Center for Environmental Information and Data	Mr
32	Do Thanh Bai	Director of Center for Environmental Protection and Chemical Safety	Mr
33	Nguyen Thi Hue	Officer, Environmental Technology Institute	Ms
34	Le Binh Duong	Officer, Environmental Technology Institute	Mr
35	Phung Ngoc Bo	Officer, Vietnam National Chemical Group	Mr
36	Bui Thi Luyen	Officer, Dupont Paint Company	Ms
37	Pham Thi Minh Nguyet	Reporter, Science and Technology Newspaper	Ms
38	Dang Thuy Linh	Official, Division for Pollution Control for Chemicals, environmental incidents and environmental health of PCD, VEA	Ms
39	Doan Thi Phuong	Officer, PCD	Ms
40	Tran Dai Lam	Officer, Material Science Institute	Mr
41	Nguyen Ngoc Vinh	Officer, Environment and Natural Resources Institute	Mr
42	Trinh Minh Phuong	Officer, PCD	Mr
43	Nguyen The Thong	Officer, PCD	Mr
44	Phan Thi To Uyen	Official, Division for Pollution Control for Chemicals, environmental incidents and environmental health of PCD, VEA	Ms
45	Bui Sy Hoang	Officer, National Institute of Labour Protection	Mr
46	Phan Thi Thanh Hang	Officer, PCD	Mr
47	Nguyen Ngoc Quynh	Officer, PCD	Ms
48	Nguyen Duy Anh	Officer, Institute of Materials Chemistry	Mr

Among participants, the number of women was about 35% total participants. They also actively joined the discussion and gave comments.



**LIST OF THE PARTICIPANTS OF THE TRAINING COURSE**

<b>No</b>	<b>Name</b>	<b>Workplace</b>	<b>Gender</b>
1	Nguyen Hoang Anh	Deputy Director of Pollution Control Department (PCD), VEA	Ms
2	Vu Tat Dat	Deputy Head of Division for Pollution Control for Chemicals, environmental incidents and environmental health of PCD, VEA	Mr
3	Le Thi Hien	Officer, University of Engineering and Technology, Vietnam National University	Ms
4	Nguyen Manh Hung	Officer, Vietnam Standard and Consumers Association (VINASTAS)	Mr
5	Pham Ngoc Anh	Official, Plant Protection Department, Ministry of Agriculture and Rural Development	Ms
6	Nguyen Thi Ha	Officer, Bacson Investment and Development Joint stock Company	Ms
7	Vu Van	Reporter, Environment and Natural Resources Newspaper, Ministry of Natural Resources and Environment	Ms
8	Nguyen Van Thang	Officer, Vietnam Cleaner Production Centre	Mr
9	Do Quang Trung	Officer, VNU University of Science	Mr
10	Nguyen Ba Dung	Officer, Hanoi University of Natural Resources and Environment	Mr
11	Nguyen Thi Thu Trang	Officer, Institute of Environmental Science and Engineering	Ms
12	Nguyen Thi Hoai Phuong	Officer, Institute of Materials Chemistry	Ms
13	Le Ngoc Thuan	Officer, Hanoi University of Natural Resources and Environment	Mr
14	Nguyen Sy Khanh Linh	Officer, National Institute of Labour Protection	Mr
15	Chu Xuan Quang	Officer, Institute of Technology Application	Mr
16	Luu Manh Quynh	Officer, VNU University of Science	Mr
17	Nguyen Hoang Nam	Officer, Vietnam Japan University	Mr
18	Luu Van	Reporter, Newspaper of Enterprise Forum	Ms
19	Le Binh Duong	Officer, Environmental Technology Institute	Mr
20	Phung Ngoc Bo	Officer, Vietnam National Chemical Group	Mr
21	Bui Thi Luyen	Officer, Dupont Paint Company	Ms
22	Tran Dai Lam	Officer, Material Science Institute	Mr
23	Phan Thi To Uyen	Official, Division for Pollution Control for Chemicals, environmental incidents and environmental health of PCD, VEA	Ms
24	Nguyen Ngoc Quynh	Officer, PCD	Ms
25	Nguyen Duy Anh	Officer, Institute of Materials Chemistry	Mr



### SOME PHOTOS OF THE WORKSHOP AND TRAINING COURSE

