

2010 Report of SAHTECH

February 2011

SAHTECH expanded international technical exchanges and industrial services in 2010. SAHTECH has been designated as the Taiwan National Chemical Substance Register (NCSR) Office by the Council of Labor Affairs (CLA) for establishing the national chemical inventory. Taiwan's first National Existing Chemical Inventory, which would form the foundation of national chemical management scheme, already subsumed 30,000 more substances with the efforts of SAHTECH. Official representatives of chemical sectors from areas in a close trading relationship with Taiwan, such as European Chemicals Agency, Japan Ministry of Economics, Trade and Industry, had been invited by SAHTECH to Taiwan to share their perspectives. SAHTECH also attended international meetings on behalf of government, such as APEC Chemical Dialogue, and exchanged experiences with major and official organizations, such as UN International Labour Office, US Cal-OSHA, OECD, etc. SAHTECH continues to serve as the GHS implementation focal point of Taiwan to host the APEC GHS gateway website for sharing labelling and SDS, a.k.a. the G.R.E.A.T. project.

The ventilation and electrical safety of the Taiwan Pavilion in EXPO 2010 Shanghai-China was partly designed and verified by SAHTECH. Numerous LED, photovoltaic and chemical factories received SAHTECH's assistance in process safety and facility safety during design phase. It is notable that more than 11,000 industrial safety and health professionals attended 120 workshops and training courses conducted by SAHTECH. Technology activities in 2010 were focused on risk management and energy saving of semiconductor, photovoltaic, LED, TFT-LCD, chemical and steel industries. Some activities are summarized below.

Electronic-related High-tech Safety Services

Smoke dispersion and personnel life-escape simulation of a fire scenario in clean room, and modeling for the release of ammonium trailer on road were provided to LCD clients. SAHTECH also utilized facility and system safety designs to help clients build new LED/ solar cell factories. All members of the Taiwan Optoelectronic Semiconductor Industry Association (TOSIA) continued to receive energy saving services from SAHTECH. SEMI S2 certification of process tools and abatement efficiency verification

of scrubbers, evaluated by Fourier Transform Infrared Spectroscopy, were also delivered to hi-tech equipment manufacturers. Super-sonic leak detection, infrared thermo-image, and 3-D flow pattern simulation and detection were commonly utilized in the facility safety projects.

Mechanical and Electrical Safety Services

Equipped with ISO guide 65 certification, SAHTECH had close interactions with equipment manufacturers and users regarding product safety. SAHTECH helped the CLA issue and promote safety certification programs for machinery/installation and explosion-proof electrical equipments. SAHTECH also exchanged experience with EU, Japan, and Korea for certification schemes in 2010. The manufacturing quality of the pressured vessels regulated by the CLA was monitored by SAHTECH. Meanwhile, mechanical integrity services were also delivered to steel and nuclear power plants.

Process Safety Services

SAHTECH utilized Hazard Operability Study (HazOp), Layer of Protection Analysis (LOPA) and Safety Integrity Levels (SIL) in addition to process hazard analysis to help chemical, steel, electronic-related and engineering consultant clients make proactive risk management decisions in design or operation stages. Major clients included China Petroleum Corp. and Taiwan Fertilizer Company. Tutorial courses were also delivered to more than 200 engineers.

Accident Investigation Services

SAHTECH provided contracted accident investigation reports to a number of public notary companies and property insurance companies in 2010. Fire simulation modeling, sequentially timed events plotting, events and causal factors charting, why tree analysis and some retro-fit laboratory testing were commonly incorporated in the reports. Services were delivered to chemical, furniture, and printed circuit board factories, etc.

Chemical Safety Services

SAHTECH is the national helpdesk for occupational chemical safety and EU REACH compliance questions. In 2010, more than 420,000 services were provided. It also plays an important role in technical supports to facilitate the process of national Existing Chemicals Nomination (ECN) program launched by the government, as it was designated to be the National Chemical Substance Register (NCSR) Office. The list will

open a new era of safer national chemical management both for workplace and environment. A large number of international officers or industrial groups, such as Korea EPA, Japan JCIA and JETOC, etc., visited SAHTECH to exchange views and advanced approaches regarding national chemical inventory.

SAHTECH also helped other competent authorities, such as Environmental Protection Administration, Council of Agriculture Affairs, and Ministry of Economic Affairs to deal with chemical safety management issues. Moreover, SAHTECH provided technical services to numerous multinational chemical companies to comply with Taiwan's GHS regulatory requirements in 2010. Tool of chemical control banding for occupational exposure was preliminarily developed, and the estimation model of quantitatively environmental toxicity for chemicals was investigated in 2010.

OSH Management and Business Continuity Management Services

SAHTECH helped the CLA promote Taiwan Occupational Safety and Health Management System (TOSHMS). Numerous auditors were trained and certified, and the service quality of certifying bodies was monitored. By 2010, around 545 organizations passed TOSHMS certification, where 11% and 27% of them were composed by 100 under and 100~300 workers and contractors respectively. The occupational accident rate (OCR) of the TOSHMS organizations was 45% lower than the average OCR of general industries in 2010. Under the instruction of the CLA, a basic occupational OSH service for 13,000 small business units, with workers less than 100, was delivered by SAHTECH with the help of 465 OSH professionals. Furthermore, a 60% reduction in fatality rate was achieved as compared to year 2009 by this Dandelion project. Some companies were grouped into 31 Dandelion families and 3 TOSHMS families in 2010, with aims to upgrade their OSH management including experience sharing, top management SH training and contractor management. In a positive outlook, the family member companies with the help from SAHTECH would be expected to become good SH practice models in their local region to upgrade Taiwan work OSH as a whole in the near future. Training materials of risk assessment and CLA's official reference material were also prepared by SAHTECH in 2010.

SAHTECH also held a series of OSH training courses, by contract, for the engineers working in the Hsinchu Science Park of National Science Council. Some steel, chemical, furniture and construction companies were also assisted by SAHTECH in the

implementation of risk assessment and management program. Meanwhile, business continuity management system was provided to strengthen the capacity in environmental, safety, and health (ESH) for communication, specialty chemical, semiconductor companies and their suppliers in 2010.

Professional Commonweal

SAHTECH was elected as a World Safety Organization (WSO) Collaborating Center for Occupational Safety and Health; in addition, the president of SAHTECH received the concerned professional award from WSO in 2010. SAHTECH supported numerous conferences and activities of ESH and green technology, such as those of Taiwan Occupational Hygiene Association, Taiwan Occupational Safety Association, Taiwan Safety Education Association, Taiwan Industrial Gas Association, SEMI Taiwan, Taiwan Responsible Care Association, Taiwan Aerosol Research Association, Taiwan Super Critical Fluid Association, Taiwan Photo-catalyst Industrial Association, SEMI Taiwan, Taiwan-China-Hong Kong-Macaw annual SH, and EPICOH-MEDICHEM. Twelve college students received a SAHTECH internship/scholarship in 2010 to help them advance SH knowledge.

As a responsible organization, SAHTECH will continue to contribute expertise to promote ESH technologies, help clients in line with international standards, be involved with and look after ESH societies, and serve as technical supports of public agencies.

SAHTECH was founded in the year 2007 with help from the Industrial Safety and Health Association of the R.O.C. (Taiwan), CY LEE & Partners Architects, Hermes-Epitek Corp, Fubon Insurance Co., Tokyo Electron Ltd., ULVAC, and Mr. Tony Lai. SAHTECH aims to be a major player in the field of ESH technology and services in the Far East. It is noteworthy that 15% of the SAHTECH staff holds a Ph.D. degree, and 70% have a master degree. Their experience in ESH spans over 14 years on an average, and many of them are certified professional engineers, certified ESH personnel, or certified OHSAS 18001 auditors in Taiwan.

Photo Gallery



02.2010 Visitors from Japan Chemical Industry Association (JCIA) and *Japan Chemical Industry Ecology-Toxicology & Information Center (JETOC)*; from left: Dr. Jowitt Li, President Jung-Pin Yu, Ms. Wu, Mr. Yamataka, Chairman Shuh Woei Yu, Mr. Masahiko, Mr. Nakamura.



04.2010 Vice President Chien-Chang Huang teaching in a Hi-tech facility safety seminar of 13th Taipei International Safety & Security Expo.



05.2010 Principle Engineer Ching-Feng Lin teaching in a certification scheme seminar for explosion-proof electrical equipments.



06.2010 SAHTECH experts conducting electrical and mechanical safety design on the Taiwan Pavilion in EXPO 2010 Shanghai-China; from right: Engineer Ti-Nung Tseng, Vice President Chien-Chang Huang, and Prof. Hong-Bin Cheng (Taipei Institute of Science and Technology).



07.2010 Director Heng-Li Su teaching in a SEMI ESH Guidelines workshop.



07.2010 SAHTECH family day—Shei-Pa National Park tour.



09.2010 ECHA REACH updated workshop in Taipei; from right: Dr. Jowitt Li, President Jung-Pin Yu, General Director Chien-Hui Lin (EPA), Ms. Eva Sandberg (ECHA), Section Chief Nai-Yuan Liu (IDB, MOEA), Dr. Wen-Fa Lin (ITRI).



09.2010 Japan Chemical Substances Control Law workshop in Taipei; from left: Dr. Jowitt Li, Senior Specialist Shu-Ling Chen (EPA), President Jung-Pin Yu, Director Hwan-Ran Fuh (CLA), Ms. Chie Fujita (Chief, Safety Assessment Division, NITE, Japan), Mr. Takashi Fukushima (Director, Chemical Management Policy, MIB, METI, Japan), Deputy Director Shen Chen (CLA), Section Chief Gorming Chang (CLA), Engineer Marvin Liu (SAHTECH).



09.2010 Mechanical safety training course, conducted by experts from the Japan Technology Institute of Industrial Safety.



09.2010 Engineer Vincent Wei (L) conducting Taiwan OSH Management System (TOSHMS) Instructions on a chemical facility.



09.2010 TOSHMS families inaugural meeting- President Jung-Pin Yu (L2), Minister Ju-Hsuan Wang (Council of Labor Affairs), Vice President Jin-Ming Lee (Great Eastern Resin), General Director Hwan-Ran Fuh (CLA).



10.2010 Director Jui-Yu Lin (Standing) led SAHTECH team conducting process safety review for an oil refinery company.



11.2010 SAHTECH was elected as a World Safety Organization Collaborating Center for Occupational Safety and Health.



12.2010 A site observation activity of the Dandelion Project, a safety and health capacity-building project for small business enterprises; Engineer Tanya Wang (L1), Engineer Annie Ho (L2), Principle Engineer William Lee (R4).

Summary of 2010 Promotion of Chemical Management and Communication Measures in Workplaces Project

In order to assure the safety and health of labors in workplaces, as well as to enrich their knowledge about the hazards of chemicals, this project was implemented to establish national legal provisions and standards of chemical management mechanism.

This project delivered 8 work items oriented in 4 core mandates:

1. To develop codes of practices of chemical safety management;
2. To analyze and exchange information on international chemical management trends;
3. To expand the database of chemical hazard communication;
4. To hold dissemination meetings and education trainings on the topic of hazard communication in workplaces.

The following tasks have been delivered for development of codes of practices of chemical safety management:

- (1) Finished the drafts of chemical management system document framework in 13 formats by taking into account international models;
- (2) Completed the draft of Article 7 (2) and 7(3) of Labor Safety and Health Act concerning registration, evaluation, restriction and authorization of new chemicals as to help policy making.

In terms of analyzing and exchanging information on international chemical management trends, the following tasks have been delivered:

- (1) Laid out the scope and objectives of National Chemical Management Profile(NCMP);
- (2) Established strategic steps recommended by the UNITAR;
- (3) Promoted NCMP strategy and preliminarily analyzed our national status through inter-agency action plan workgroup meetings as to facilitate our first national NCMP development;
- (4) Delivered a copy of mini NCMP (Taiwan NCMP at a Glance);

As for expanding the database of chemical hazard communication, the following tasks have been delivered:

- (1) Established MSDS and labeling examples of 300 chemical substances classified by GHS system;
- (2) Maintained English and Chinese GHS website and kept up with the

- updates of database and news release;
- (3) Redesigned software program and database format concerning the need of computer host upgrade;
 - (4) Placed the web counter at the APEC G.R.E.A.T website and analyzed the usage situations as to offer information for relevant users.

Regarding holding dissemination meetings and education trainings on the topic of hazard communication in workplaces, the following tasks have been delivered:

- (1) Assisted labor unions /associations/industrials in holding 20 dissemination meetings on hazard communication for SMEs where 1,965 participants attended;
- (2) Continued to provide consulting service and delivered 4 issues of e-Newsletters to over 30,000 member industries regularly
- (3) The visit frequency on GHS website exceeded 60,000 times every month, indicating that this website functions the main channel for industrials to access GHS technical support;
- (4) Over 32,000 individuals and industrials have registered as members at GHS website;
- (5) Reinforced on the promotion of GHS website and provided more service and latest information as to improve its efficacy.

Summary of 2010 Pesticide/Insecticide Classification and Labelling Management Plan of Globally Harmonized System (GHS) Project

This project aimed to align with Taiwan GHS system implementation plan of the Executive Yuan, with two main objectives: (1) to amend relevant regulations and rules of pesticide/insecticide classification, labelling, material safety data sheet (MSDS/SDS) to complete a labelling and management system based on GHS; (2) to provide technical assistance to pesticide/insecticide industries for a successful implementation.

This project aimed to deliver the following works: (1) translation of the WHO/FAO guide of classification and labelling of pesticide/insecticide ; (2) amendment of the related regulations and rules of pesticide/insecticide classification and labelling, and also collected and analyzed international harmonization development of classification and labelling of pesticide/insecticide align with GHS; (3) GHS training seminars, and GHS consultation to industries through phone, FAX and web-based; (4) preparation of pesticide/insecticide MSDS/SDS and safety information; and (5) updated pesticide/insecticide GHS official website.

This project had accomplished the translation of WHO “*Recommended Classification of Pesticide by Hazard*”, information gathering of WHO, FAO and other international organizations’ latest development on pesticide management, gap analysis between current labelling regulation and WHO recommendation, held three GHS awareness-raising seminars with 152 participants from 119 companies/industries, revised over 130 kinds of pesticide safety information, and delivered a Pesticide GHS Tool to assist companies/industries implementation GHS in the near future.

In addition, this project also updated the pesticide safety information website and GHS office website to correspond with the authority’s request. Also through the GHS website, latest news and technical assistances were provided to target audiences. The objectives of the Project were achieved with all these efforts were designated as a foundation for future GHS implementation.

Summary of the National Chemical Substance Registration and Management Project

This project aimed to improve safe chemical use in workplaces, enhance awareness-raising on worker's safety and health, and to advance national chemical management mechanisms.

In line with international standards and taking into account the measures from leading countries in the field of chemical management, establishing a national existing chemical substance inventory to complete the infrastructure of chemical source safe control has been considered as the task in priority. In the future, a new chemical notification mechanism will be set up to run in the pattern of authorization and evaluation to avoid overlapping efforts and save national resources while legislation procedures of competent authorities will be harmonized. Those efforts aimed to raise the standard of our national chemical management and catch up with international trend.

Four core mandates for this project included:

1. To complete the draft "National Existing Chemical Inventory" and its review ;
2. To establish recommended national hazardous substance inventory and information system of hazard identification/ assessment
3. To complete the operational mechanism of hazardous chemical registration and harmonized information system
4. To introduce international chemical registration system and encourage international exchanges on experiences and knowledge

As for establishing "National Existing Chemical Inventory", the following tasks have been delivered:

- (1) Amended existing chemical substance nomination tools;
- (2) Designed and edited color flyers and posters for disseminations;
- (3) Held 16 "Orientation Meetings of Existing Chemical Substance Nomination (ECN) Trial Operation", which introduced nomination procedure and explained relevant questions, where totally 1,692 participants attended;
- (4) Received over 68,000+ items (20,926 non-overlapped items) of chemical substance data for nomination from 1,056 companies;
- (5) Completed the inspection on data completeness and rationality by checking nominator basic information, CAS number, Chinese

chemical name, English chemical name, annual tonnage,

In terms of establishing recommended national hazardous substance inventory and information system of hazard identification/assessment, the following tasks have been delivered:

- (1) Renewed international chemical database rental;
- (2) Established a hazard identification database (labeling and draft of MSDS/SDS examples) for chemical substances designated for midterm examination;
- (3) Finished the program design and arrangement of information system that combines inventory and hazard identification, including functions of registration/log-in, multi-function inquiry and connection to hazard identification database.

As for completing the operational mechanism of hazardous chemical registration and harmonized information system, the following tasks have been delivered:

- (1) Held expert consulting meetings;
- (2) Completed the information plate-form of priority/controlled chemical quantity registration and offered recommendations for registration mechanism;
- (3) Held 2 inter-agency work group meetings in cooperation with the executive body to report the updates of national chemical registration mechanism project.
- (4) Participated in APEC Chemical Dialogue and international chemical management- related meeting (OECD parallel notification);
- (5) Directly interacted with the representatives from other countries and collected newest information on international chemical management promotion;
- (6) Visited Japan competent authorities, exchanged views with international organizations, and arranged a visit to Europe in the later 2010.
- (7) Assisted the CLA to host Workshops with ECHA & Japan METI representatives as guest speakers in Taipei.

As far as the following tasks in the later half year are concerned, the following issues should be stressed:

- (1) To constantly encourage companies and instruct them in existing

- chemical substance nomination;
- (2) To complete national existing chemical inventory beyond 20,000 items;
 - (3) To keep establishing hazardous chemical identification database and information service platform of priority/controlled chemical quantity registration.

Summary of the Strategy Counseling and Promotion for Responding to EU New Chemical Management Regulation REACH Project

In order to respond to the implementation of the EU REACH regulation, and to enhance competitiveness of Taiwan-based industries in the EU market while maintaining environment sustainability and human health, this project had the following aims:

1. Provide the latest news and technology information from the European Chemical Agency (ECHA) to Taiwan industries as an effort on capacity-building for REACH compliance
2. Supply counseling services regarding registration and SVHC notification pursuant to REACH regulation to Taiwan industries to minimize the impact of foreign regulation compliance.

This project delivered the following:

- (1) Held 2 seminars addressing REACH regulations and ECHA implementation issues.
- (2) Completed seven issues of technical guidelines for CSR, C&L notification, classification and labeling of hazard chemicals, payment in REACH-IT, business rules and FAQ under REACH to industries.
- (3) Completed four issues of quarterly newsletters and fifty presentations of REACH's latest news briefings.
- (4) Completed fifty four services of factory counseling regarding obligations for registration, C&L notification, and SVHC screening according to the REACH system.

Summary of Technical Aids for the SBE Safety and Health Capacity-building Project

Small business enterprises (SBEs), which have less than 50 workers, are usually less cared for by the government, despite the fact that they constitute 84% of Taiwan's total enterprises in terms of number. SBEs in Taiwan are very dynamic and locally rooted, as they employ a large part of labor workforce and make a considerable contribution to social stability. However, due to lack of occupational safety and health (OSH) capacity, the SBEs also have higher SH injury rate (IR) as compared to medium size and large enterprises. Recent statistics indicate that the IR of SBEs has decreased insignificantly, whereas the IR of the others has improved dramatically.

This SH capacity-building project, a.k.a. Dandelion Project, aims at improving SH awareness and capacity of SBEs. One part of this project is to arrange supports from the CLA for county governments to hire official OSH professionals and to organize basic SH service teams to disseminate SH information and provide necessary consultation. The other part (this supporting sub-project) provides service tools, training, and technical assistance to facilitate the service of the county SH professionals and their teams. This sub-project has multi-discipline professionals to provide comprehensive technical supports, and it also serves as a quality control office as well as a basic SH service team for those counties without official SH professionals.

In 2009, 470 service team members visited 15,000 SBEs, where 95% of SBEs had less than 50 workers and 87% had less than 30 workers. Among these, manufacturing-related sectors and construction sector constitute 84% and 16%, respectively. Moreover, 4,800 SBEs received technical assistance in two more instances, and 130 SBEs received additional engineering-control assistance. Partial financial support was received by 224 SBEs for SH improvement of machinery, equipments, and installations, and the government funding amounted to around NTD 4 million, which is approximately 45% of the total improvement budget. Hundred factories in the sectors of resin, form, and synthetic leather also received basic occupational OSH service. Further, 200,000 copies of OSH placards and guides were delivered. Around 20,800 pieces of further recommendations were provided to those 4,800 SBEs who received additional technical assistance. The implementation rate of recommendations was about 84% or 3.7 items per factory. However, the completion rate of industrial hygiene, health promotion, and management system was less than 70% or 3.2 items per factory.

Preliminary statistics indicated that the IR of the visited SBEs in 2008 was reduced

by 10% and 17% in 2008 and 2009, respectively, as compared to 2007. The IR of the SBEs, which received additional assistance in 2008, was reduced by 11% and 27% in 2008 and 2009, respectively, as compared to 2007. For those SBEs visited in 2009, 11% reduction in IR was found as compared to 2008. Moreover, the IR of the SBEs, which received additional assistance in 2009, was reduced by 19% as compared to 2008. According to a survey, the SBE expressed a degree 4.66 satisfaction (on a 1–5 scale survey) regarding the implementation of this Dandelion service. Most SBEs wish to continue receiving assistance, including training, subsidization on SH hardware improvement, and experience-sharing seminars.

Approximately 800,000 SBE workers were covered by this Dandelion project from 2007 to 2009. Workers of 36,000 SBEs, which account for about 45% of the SBE workforce consisting of less than 50 workers, abide by the OSH Act. In addition, sufficient training to upgrade the capacity of local service teams is a key factor driving this project to success. Data also indicates that focusing on (a) prevention of mechanical cutting and rolling, electrical shock, falling, (b) engineering control for industrial hygiene risk factors, (c) establishment of simple OSH management system, could be the major assistance tasks of the following year.

Summary of Quality Control for the Authorized Inspection Agencies of Dangerous Machinery and Equipment Project

The project assisted the Council of Labor Affairs (CLA) in effectively controlling the quality of three authorized inspection agencies (AIA) inspecting dangerous machinery and equipment (DME). The major tasks were as follows:

1. Managed and upgraded the inspection information management system (IIMS) of DME.
2. Monitored the inspection practice and quality of AIA.
3. Amended inspection technical documents for DME.
4. Held DME-related seminars and on-job trainings for AIA inspectors.
5. Reviewed inspection fees, accounting, and general affairs of AIA.

The quality of AIA was improved by 36%, as compared to the deviations of inspection in 2008. The average satisfaction rate of seminars and trainings was around 90%. Results of this project are as follows:

- (1). Managed and upgraded DME Inspection Information Management System (IIMS).
 - a. Managed and upgraded the web-based version of IIMS, inspection statistical analysis system, inspection result system, and inspection data backup system.
 - b. Provided six training courses to the authorized DME inspectors and system administrators.
 - c. Handled other emerging DME-related information system issues for three AIAs and three regional labor inspection offices (RLIO).
- (2). Monitored the inspection practice and quality of AIA.
 - a. Monitored the on-site inspection quality of AIA at 132 sites.
 - b. Handled AIA internal control audit 12 times.
 - c. Monitored on-site the production quality of dangerous equipments in 24 manufacture factories. Results indicated that the quality has improved as compared to 2007. However, the implementation of quality system and the accuracy and precision of X-ray non-destructive detection can be further improved.
- (3). Amended inspection technical documents for DME.
 - a. Completed eight handbooks of amended DME inspection for cranes, mobile cranes, elevators, gondolas, high pressure vessels, specific high pressure vessels,

- Type-1 pressure vessels, and boilers.
 - b. Completed the new and revised inspection operation procedures, standards, and record documents of 82 DME.
- (4).Held DME-related seminars and on-job trainings for AIA inspectors.
- a. Provided 18 on-job trainings for AIA inspectors attended by 582 participants.
 - b. Accomplished three seminars on “Dangerous Machinery Authorized Inspectors Pre-Job Training” with 102 participants.
 - c. Held nine DME related seminars attended by 278 participants.
- (5). Reviewed inspection fees, accounting, and general affairs of AIA.
- a. Reviewed AIA accounting practices, human resources, and general affairs.
 - b. Other emerging tasks are as follows:
 - i. Proposed the management system of crane and lifting equipment.
 - ii. Held three DME related seminars attended by 87 participants.
 - iii. Provided equipment identification sheets, welding details, strength calculation sheets, and construction blueprints of 43 DME inspection files to AIA.
 - iv. Facilitated the 2009 Operation Conference for Authorized Inspectors, with an attendance of 130 participants.
 - v. Conducted the quarterly AIA performance review.

Summary of Project to Enhance Chemicals Management in accordance with EU REACH Regulations Project

This project provided strategic planning and recommendations of amending the current Toxic Chemicals Substances Control Act (TCSCA) of Taiwan's Environmental Protection Administration, Executive Yuan. The discrepancies between the mechanisms of Taiwan's TCSCA and EU REACH Regulations were addressed and analyzed in this project. The core values of EU REACH were suggested to be adopted in Taiwan's TCSCA by incorporating the existing chemical substances and new chemical substances' registration mechanism into the current system in order to improve the current toxic substances' screening mechanism.

Suggestions on chemical substances registration data requirements were proposed and analyzed. Combining with Taiwan's interagency cooperation effort on existing chemicals inventory establishment and hazard identification principles, amendment of the TCSCA was planned also based on the evaluation and operation mechanisms of the substances of very high concern (SVHCs) in other countries.

In addition, communication platforms were engaged with the European Chemicals Agency and the Organization of Economic Cooperation and Development to enhance information exchange and future cooperation. Access to the information on EU REACH and chemical substances' information dissemination were provided to the local industries in order to encourage safe use and management of chemical substances and to extend the responsibilities for the industries to protect the environment and citizens, ensuring the protection of human health and environmental sustainability.

Summary of Taiwan OSH Management System Project

Guideline of Taiwan Occupational Safety and Health Management System (TOSHMS) was issued in 2007. This voluntary system consists of structural elements of ILO-OSH 2001, and also adopts relevant requirements of OHSAS 18001:2007. Through the auditing by commercial certification bodies (CBs) designated and quality-controlled by CLA, any organization that passes TOSHMS certification is qualified to obtain the certificates of TOSHMS and OHSAS 18001, and waive of CLA's scheduled inspections.

Technical guidelines are issued and trainings are provided to all industries. Organizations and their supply-chain partners are encouraged to implement the TOSHMS. Auditors, with mandatory OSH certifications and experience, are trained and evaluated annually by CLA. The auditing reports of designated CBs are regularly reviewed and compared in peer. The three audited requirements as of operational control, hazard identification/risk assessment/determining controls and performance measurement/monitoring roughly accounted for 35%, 16% and 7% of the nonconformity and recommendation items respectively in 2010. Moreover, CLA regularly visits some of TOSHMS organizations as to verify the auditing findings of CBs. To continuously improve performance, TOSHMS families established in regions and all TOSHMS organizations are encouraged to contribute to the efforts of this mechanism promotion. Senior manager training, risk assessment training, incident investigation and experience sharing are the major activities engaged by the families.

By 2010, around 545 organizations passed TOSHMS certification, where 11% and 27% of them were composed by 100 under and 100~300 workers and contractors respectively. The occupational accident rate (OCR) of the TOSHMS organizations was 45% lower than the average OCR of general industries in 2009. In terms of improvement from year 2006 to 2009, a significant drop of 44% for OCR was accomplished by TOSHMS organizations whereas 16% by general industries. Results indicate that instruments of regulatory agency, competent social certification bodies, mutual-aid groups and top supply-chain organizations could facilitate the dissemination of OSH system. Learning and sharing of good practices of operational control will further enable organization to prevent occupational accidents and ill health.