



Feature Column

Outlook on Household Wastewater Management

Compared to other countries, only a small proportion (27.48%) of Taiwan's household wastewater undergoes treatment. To expedite river remediation work, the EPA is currently setting up onsite treatment facilities at wastewater outlets. The following three related initiatives are also being carried out to sharply reduce river pollution caused by household wastewater: treatment facility efficiency enhancement, household wastewater source reductions, and household wastewater recycling.

Generally speaking, most household wastewater in Taiwan enters the environment after passing through one or more of four wastewater treatment facilities: public sewage system, community special wastewater sewerage

systems, building wastewater treatment facilities and/or septic systems.

Taiwan's Household Wastewater Treatment Rate Lower than US or Europe

Public wastewater sewerage systems were constructed by the Construction and Planning Administration, Ministry of the Interior as a means to transport all urban household wastewater to one centralized wastewater treatment plant. After treatment, water is discharged into rivers or oceans. Up until December 2004, already 21 sewerage systems had been completed, 16 were still under construction and 17 were still at the planning stage. By

the end of December 2004, sewerage systems reached 12.4% of the populace. Places with higher sewerage system hook up rates included Taipei City (69.09%) and Kaohsiung City (35.25%).

Since 1995, the *Water Pollution Control Act* (水污染防治法) has stipulated that newly developed communities with over 100 households or over 500 people must install special wastewater sewerage systems. By the end of December 2004, special sewerage systems had been installed to serve 10.05% of the populace, with the highest hook up rate in Taipei County at 35.18%.

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網址 <http://sewer.cpami.gov.tw/top.html>

污水下水道資訊網!! 歡迎光臨污水下水道資訊網!! 歡迎光臨污

Sewer Information Network (污水下水道資訊網)

Before 1999, household wastewater from buildings were required to pass through septic systems only, which receive blackwater (urine and feces in water) and exclude greywater (wastewater from all other household activities such as bathwater, dishwater, wash water, etc.). From 1999 new buildings were required to build approved and certified onsite wastewater treatment facilities or use prefabricated ones that can handle all household wastewater, both blackwater and greywater. By the end of December 2004, already 5.03% of buildings had installed such wastewater treatment facilities.

Based on other nations' experience, the establishment of public wastewater sewerage systems has become an important indicator of national development. Taiwan also recognizes the importance of establishing proper wastewater treatment facilities.

The total ratio of households connected to wastewater treatment facilities reached 27.48% by the end of December 2004. Public wastewater sewerage systems are the nation's most effective and widespread method of treating wastewater. Based on the experience of other nations, public wastewater sewerage systems are the primary method of wastewater treatment, and the establishment of such facilities has become an important indicator of national development. Taiwan also recognizes the importance of establishing proper wastewater treatment facilities.

The Construction and Planning Administration is currently in the midst of the third stage of a major national wastewater sewerage construction plan. The plan aims to raise the per capita sewerage system hook up rate to

22.1% by 2008. Overall wastewater treatment is expected to reach 32%. Compared to the US and European countries which are already treating over 80% of wastewater, Taiwan has good reason to pick up the pace in constructing sewerage systems.

Promoting Establishment of Onsite Treatment Facilities

Taiwan's public sewerage system currently faces the following challenges:

1. Local governments are on tight budgets and are unable to raise sufficient funds on their own.
2. Apart from Taipei and Kaohsiung municipalities, all other county and city governments lack related specialists on staff.
3. Land procurement procedures are difficult and time consuming
4. Utility users are unwilling to connect to the sewerage system.
5. Operating and management expenses are difficult to levy.
6. Citizens lack understanding of wastewater sewerage system.

The EPA's current focus is to accelerate river remediation work. Rather than waiting until public sewerage systems are in place, which may still be far from now, the current stage requires a more active response. Thus the EPA is engineering projects to

strengthen purification of water quality through onsite treatment facilities such as wetlands, vegetated riverbanks, and rock bed contact aeration. To improve household wastewater pollution, the EPA is carrying out three plans to raise efficiency of treatment facilities, reduce household wastewater at its source, and reuse household wastewater. These measures will help sharply reduce river pollution from household wastewater.

The three main strategies now employed to raise efficiency of treatment facilities include expediting sewer system construction and intercepting sewers; reducing pollution through exclusive community wastewater sewer systems; and reducing pollution from septic tanks.

Household Wastewater Treatment Focuses on Source Reductions

Greywater (wash water from kitchen, bathroom, laundry, etc.) makes up 65% of all household wastewater. Buildings without sewerage systems do not treat greywater and directly release it into the environment. Thus greywater is a significant cause of river pollution and is a good place to implement source reductions of household wastewater.

Considering the current low rate of household wastewater treatment, Taiwan has referred to Japan's experience, and the EPA is carrying out several small but important source reduction measures in areas where wastewater sewerage systems are not yet available. These include installing filters on kitchen sink drainage outlets to collect food waste; reducing direct discharge of greywater into rivers and oceans, and promoting use of non-phosphorus cleaning agents.

Other simple source reduction methods promoted by the EPA include reusing rice wash water on household plants, wiping grease off pots

with used paper before washing, and taking showers instead of baths. Based on findings in Japan, the most effective greywater pollution reductions can be made at the kitchen sink, where about 65.4% of each household's greywater pollution can be cut.

As part of plans to popularize wastewater source reduction concepts and methods, the EPA is running pilot projects in three communities and has created an educational CD ROM and manual to be distributed to all communities and schools.

Treatment and reuse of household wastewater not only unlocks an important new water resource during water shortages, but also reduces the amount of pollution discharged into the environment. To expedite development of household wastewater treatment and reuse systems, the EPA has launched the "Plan to Survey, Evaluate and Manage Household Wastewater Reuse."

Concrete measures toward this plan in 2005 include surveying ten water reuse facilities and selecting the top three to serve as demonstration sites. The EPA will evaluate and propose advisory water reuse plans for these ten facilities.

The EPA will also review existing stipulations in the Water Pollution Control Act regarding water reuse and evaluate the feasibility of re-

laxing strict reuse regulations initially designed with pollution control in mind.

Waste Management

EPA Reviews Standards for Defining Hazardous Industrial Waste

The EPA has launched waste recycling and reuse policies to materialize the concept of sustainable development in terms of resources. Keeping in tandem with the *Basel Convention's* controls on hazardous waste, the EPA is drafting new standards for defining basic properties of hazardous industrial waste. Certain hazardous industrial wastes may be removed from the list of regulated hazardous wastes based on their recycle value and the extent to which they harm the environment.

In the past, there was good cause for concern about the possibility of environmental pollution during clearance or and disposal of certain industrial wastes due to inappropriate treatment methods. The EPA's response was to tighten controls on certain regulated hazardous industrial waste items possessing reuse value, and ban their import into Taiwan.

However in recent years, Taiwan has made considerable progress in developing industrial waste reuse and disposal technology, thereby greatly reducing risks of environmental pollution.

In the interest of promoting waste recycling and reuse policies and keeping up with international trends, the EPA is considering revisions to the existing standards for defining hazardous industrial waste. Wastes that have reuse value and are unlikely to pollute the environment during clearance and disposal processes may be considered for removal from the list of regulated hazardous industrial wastes. Standards for defining categories of hazardous waste will continue to undergo adjustments in adherence to the *Basel Convention*.

Household wastewater treatment rate, 31 December 2004

Region	Population	Public sewerage system hook up rate (% of population)	Special sewerage system hook up rate (% of population)	Building wastewater facilities (%)	Total (%)	Interception rate (%)
Taipei City	2,627,138	69.09	3.9	1.12	74.21	0
Kaohsiung City	1,512,688	32.25	4.705	8.56	48.51	66.5
The rest of Greater Taiwan	18,424,443	2.39	11.04	5.31	19.1	5.58
Kinmen, Matsu Islands	69,789	24.68	0	0	24.68	0
Total	22,634,058	12.4	10.05	5.03	27.48	8.98

The EPA explains that in order to expand the benefits of this potential revision, it will soon hold a series of intensive forums entitled "Developing Revisions to the Standards for Defining Hazardous Industrial Waste." Invitations to the forum have been extended to industry, academic and research organizations, environmental NGOs and all levels of government environmental protection agencies to present their views on revisions. Since May the EPA has been inviting the resource recycling industry, electronics industry and other related industries to seven small forums and two large briefings to exchange in dialogue. Around 30 forums and four briefings will have been held by October 2005.

The EPA emphasizes that it will consider recycling and reuse trends when reviewing standards for defining hazardous industrial waste. Where there is already appropriate disposal technology for wastes currently identified as hazardous, these items may be considered for removal from the list of regulated wastes. The EPA will continue to comply with the spirit of the *Basel Convention* by strictly controlling the flow of highly dangerous wastes into the environment, including electroplating sludge, printing circuit boards,

waste material, waste containing 2,3,7,8-tetrachlorinated dioxin, and transformers containing polychlorinated biphenyl (PCB).

In view of the significant rising trend in the reporting of temporary storage of industrial waste in recent years, existing standards will be reviewed to shorten the

deadline for permitting temporary storage of hazardous industrial waste, and restrict the number of times industries can apply to extend the deadline for temporary storage. The new standards will continue to ensure appropriate control and management over the flow of hazardous industrial waste.

General Policy

Indicators Call for Focus on Environment and Ecology

The NCSD announced the "2004 Taiwan Sustainable Development Indicator" in conjunction with the UN's World Environment Day on 5 June 2005. The report shows a steady increase in "Institutional Response" and "Urban Development," as well as easing up on "Economic Pressure," and "Social Pressure." However, still more effort needs to be concentrated in the areas of "Environmental Pollution" and "Ecological Resources."

The National Council for Sustainable Development (NCSD) finalized the Taiwan Sustainable Development Indicator System and had it ratified in 2003. The system contains 42 indicators under the six domains of "Ecological Resources," "Environmental Pollution," "Economic Pressure," "Social Pressure," "Institutional Response," and "Urban Development." This year marks the third consecutive year in which the results of the indicator system have been published.

NCSD Chief Executive Officer Yeh Jiunn-rong (葉俊榮) points out that the Executive Yuan announced the Taiwan Sustainable Development Indicators in 2003 to make it known that sustainable development concepts will be transfused into local practices. Sustainability indicators are provided as a window on Taiwan that can help gain insight on how to balance the current status of development in Taiwan and ensure a sustainable direction. The 2004 Taiwan Sustainable Development Indicators Outlook was issued on 5 June 2005 to tie in with World Environment Day.

The research team in charge of reviewing and analyzing the current status of Taiwan's sustainable development indicators in 2004 came to the following conclusions:

1. Institutional response is steadily increasing, showing the government's effort and commitment toward implementing sustainable development policies.
2. Taiwan's environmental status is unsustainable, yet efforts to improve environmental pollution will require a long period of time

News Brief

Ships Required to Purchase Damage Liability Insurance for Pollution Incidents

To protect Taiwan's waters from pollution by ships and ensure polluters are able to compensate for damages, a new regulation will take effect on 1 July 2005 requiring shipowners to purchase liability insurance for damage from pollution incidents. The regulations stipulate that shipowners of all general ships over 400 tonnes and all oil or chemical tankers over 150 tonnes must purchase liability insurance or provide a guarantee based on gross tonnage, and may not suspend or terminate the insurance or guarantee. Violators will be subject to fines ranging from NT\$600,000 to NT\$3,000,000. For further related information, please check this website: <http://atftp.epa.gov.tw/announce/093/G0/06176/093G006176.htm>

before results will begin to show.

3. Similarly, the state of Taiwan's ecology is not well. The government has thus passed several related bills including national land restoration regulations to steer the ecology on a more sustainable path.
4. Economic and social pressures are easing up.
5. Urban development is heading toward sustainability, showing that the government has been investing more money and resources in development of urban areas.
6. Unsustainable trends continue to worsen in the following indicators: CO2 emissions, ratio of cultivated farmland, death rate due to cancer, ratio of resource intensive industry to total manufacture industry production value, and ratio of cars to urban area. The government is currently tackling these important issues.

Taiwan's sustainable development indicator system provides a way to evaluate progress toward promoting sustainable development. It also

provides a response to the UN's request of each nation to establish indicators that help evaluate the extent to which each nation puts sustainable development into practice. The NCSD releases its annual report on the status of Taiwan's indicators every year on World Environment Day to let the world understand Taiwan's national sustainable development trends and changes in terms of environmental resources, society, economy, and government policy. The report shows the current direction of government administration, and serves as both a navigational tool and a word of warning for policymaking purposes. It also keeps other nations up to date on Taiwan's efforts to promote sustainable development.

NCSD CEO Yeh Jiunn-rong compares the indicator system to the illumination of a flashlight on the dark path ahead, where one must make the best use of minimal resources in lighting up the largest area to help guide the next few steps. Sustainable development is an ongoing process to continually review and strengthen areas that require more attention. The government

annually announces the status and trends of sustainable development indicators as a way of transfusing the indicator system and the significance of the policies that created it back into government administration, in hopes of arousing citizen concern for sustainability issues.

General Policy

National Sustainable Development Awards Granted

The Executive Yuan conferred the Second Annual National Sustainable Development Awards on 3 June 2005. Three firms received Sustainable Enterprise Awards, with United Microelectronics Corp. in first place, and three NGOs received Sustainable NGO Awards, with the Homemakers' Union in top place.

The National Council for Sustainable Development (NCSD), Executive Yuan, began holding the National Sustainable Development Awards in 2004 to encourage and commend participation in promoting sustainable development. The awards are personally handed out by the Premier of the Executive Yuan, who also serves as Chairman of the NCSD. This year's awarding ceremony was held on 3 June 2005 in the Executive Yuan, with awards personally presented by Executive Yuan Secretary Lee Ying-yuan (李應元).

In existence for two years, the National Sustainable Development Awards are divided into the following five categories: Sustainable Community Awards, Sustainable Education Awards, Sustainable Enterprise Awards, Sustainable NGO Awards and Execution of

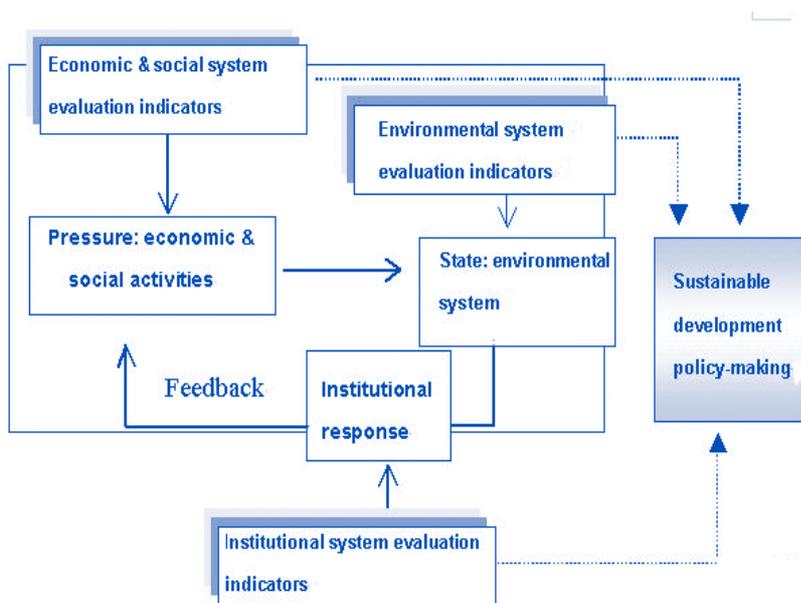


Chart: Relation between sustainability indicators and policymaking under PSR framework

Sustainable Development Action Plan Awards.

Three communities were selected for the Sustainable Community Award this year, with Sansing Community in Minsyong Township, Chiayi County in first place. Three schools received the Sustainable Education Award, with Yilan County's Ci-Xing Waldorf School in first place. Of the three firms to receive the Sustainable Enterprise Award, United Microelectronics Corp. received first place. The Home-makers' Union Environmental Protection Foundation was first place among the three NGOs to receive the Sustainable NGO Award. Of the three government agency plans to receive the Sustainable Development Action Plan Implementation Award, the EPA Bureau of Environmental Inspection's food waste recycling plan received the best rating. Fifteen entities in all received awards.

The evaluation process of the National Sustainable Development Awards involved two steps including a written preliminary report and an onsite inspection. The evaluation committee for the onsite inspection comprised NCSD council members, advi-

sory members and working group members. Inspections were carried out for nearly a month from early April to mid May (2004). After in-

specting over 30 entities in locations all over Taiwan, the most outstanding ones were chosen to receive awards.

Air Quality

Motorbike Air Pollution Standards to Be Tightened

Following Taiwan's admission to the WTO as well as developments in international laws, the EPA has consulted the European Union's third phase of exhaust pollution regulations (EU3) in revising standards for motorbike emissions. Changes made to related air pollution standards will take effect on 1 July 2007.

Acting on its new membership in the WTO, Taiwan is complying with international trends in vehicle emission regulations. In the interest of spurring the domestic motorbike industry to keep up with technology development around the world, as well as to protect environmental quality, the EPA has referred to the European Union's third stage of exhaust pollution regulations (EU3) in revising motorbike emission standards.

Draft revisions made to *Article 6 of the Vehicular Air Pollutant Emission Standards* (交通工具空氣污染物排放標準) call for stricter standards on certain air pollutants. To reflect driving habits in Taiwan as well as the actual sta-

tus of pollution while motorbikes are in use, the revised article now requires testing from a cold start rather than the former practice of allowing the engine to warm up before testing emissions. The revision has also taken into consideration the impacts of the new regulations on motorbike manufacturers and importers. The revised article will take effect on 1 July 2007.

The main revisions proposed for Article 6 of the standards are as follows:

1. For both two-stroke and four-stroke engines, different standards will be adopted using 150CC as the cut-off point.
2. Testing of new models must include endurance tests, and exhaust control systems should be guaranteed for three years or 15,000 km.
3. Production of domestically manufactured or imported motorbike models mass-produced and certified before 30 June 2007 is allowed to continue until 31 December 2008.

This revision has already gone through the legal drafting process, and the draft was announced on 22 December 2004. A public hearing on the draft revision was held on 16 February 2005, and consensus has been reached concerning the



Executive Yuan Secretary General Lee Ying-yuan (李應元, right) presents National Sustainable Development Award to United Microelectronics Corp. President Tsao Hsing-cheng (曹興誠).

revised content. In keeping with Taiwan's promise to abide by the WTO's Agreement on Technical Barriers to Trade, the Secretariat of the WTO and all member nations were notified of the revised content

on 15 March 2005 and invited to provide feedback. Up until 9 June 2005, no member nation has expressed disagreement with the revision.

streamlining administrative affairs. The criteria target industrial park wastewater unified treatment plants, the papermaking industry, tanneries and other industries with large water usage and heavier pollution loadings. They also address illegal conduct such as using hidden pipes to discharge effluent or intentionally dumping effluent into the environment. For example, companies found discharging effluent via hidden pipes will be fined at least NT\$150,000 rather than the minimum fine of NT\$60,000, due to the nature of the polluting behavior.

Water Quality

Penalties for Serious Water Pollution Violations Specified

In an effort to curb major incidents of water pollution and illegal effluent discharge, the EPA has specially drafted and promulgated the *Criteria for Determining Penalties for Violations of the Water Pollution Control Act Causing Serious Pollution*. For enterprises holding permits to generate over 500 tonnes of wastewater per day or wastewater sewer systems that severely pollute water bodies, for example by violating the *Effluent Standards*, fines have been increased to a maximum of NT\$600,000.

The *Water Pollution Control Act* (水污染防治法) has been in force for nearly 30 years, setting the range of maximum and minimum penalties for various illegal behaviors. Recording 1,700 penalties issued in 2004 for violations of the *Water Pollution Control Act*, the EPA has found that because local environmental protection agencies are allowed to judge the degree of pollution by their own yardsticks, as high as 73% of polluters are charged the minimum fine. This means that insufficient consideration is given to issuing different penalties for different types of pollution incidents or different degrees of environmental pollution.

Current penalties for illegal behavior are not as effective as they could be because such a high ratio of violations receive the minimum penalty, and there is no way to ensure steeper penalties for serious pollution. The EPA has thus drafted related criteria to unify methods of determining penalties. The criteria will provide an important reference for local environmental protection agencies when issuing fines.

With the continual occurrence of

major water pollution incidents and secret discharge of effluent into water bodies in recent years, the EPA has drafted and promulgated the *Criteria for Determining Penalties for Violations of the Water Pollution Control Act Causing Serious Pollution* (違反水污染防治法嚴重污染案件罰鍰額度裁量基準) on 20 May 2005. The criteria target any conduct causing serious pollution of water bodies, including violations of the *Effluent Standards* by wastewater sewer systems or enterprises holding permits to generate over 500 tonnes of wastewater per day, discharges of substances hazardous to human health, discharges of untreated effluent in a circumvent or secretive manner, or dumping of waste into rivers by tankers. Penalties have been increased according to the degree of pollution caused, with a maximum penalty of NT\$600,000 in hopes of daunting corporations from causing major water pollution incidents.

The EPA stresses that the criteria have been drafted on the basis of

The EPA has asked environmental protection agencies to clamp down on monitoring the abovementioned industries and ensure the proper management of their wastewater and effluent. These industries are forewarned not to test their luck as environmental protection agencies are making thorough inspections and issuing heavy penalties in all instances of illegal discharge of effluent into the environment. The new criteria aim to ensure effective control over factory wastewater and enhance the water quality of rivers and other water bodies.

Air Quality

Taiwan Installs International Ambient Air Quality Monitoring Station

The EPA is preparing to establish an ambient air quality monitoring station on central Taiwan's Mt. Lulin to give a large picture of regional air quality. Expected to be up and running before the end of next

spring (2006), the facility will serve as an integral ambient air quality monitoring station for the Asia region.

The EPA has established 76 automatic air quality monitoring stations around Taiwan. However, the monitoring results of these stations only represent local air quality and are not designed to observe air quality on a regional scale. Therefore, since 2004 the EPA has been planning the installation of a regional ambient air quality monitoring station. Now at the stage of construction and purchasing equipment, the station is expected to commence operations before the spring of 2006.

Located on central Taiwan's Mt. Lulin, the station will become a vital part of international ambient air quality monitoring in the Asia region. Observation criteria of other nations' ambient air quality monitoring stations have been referenced in procuring equipment for the station, which will include high-precision instruments capable of analyzing meteorological phenomena, air bodies, particulate matter, and aerosols. Once operations commence, the station will connect with international monitoring networks and effectively stay abreast of how large-scale regional movement of pollutants affect Taiwan over a long time period.

The EPA indicates that after referencing criteria for international ambient air quality monitoring stations, the station's location was chosen on the border between Chiayi and Nantou counties, on Mt. Lulin adjoining Yushan National Park at an altitude of 2,862 meters. The site is adjacent to the Lulin Observatory operated by National Central University. As local air pollutants will not interfere with measurements, the station will be able to reliably quantify the extent to which regional air quality monitoring station analyses are

affected by distant phenomena.

Taiwan is located in the southeast corner of continental Asia, downstream of the greater Asia region in terms of normal climatic conditions, and prone to the effects of air pollutants from Asia. Taiwan's air quality has seen numerous instances of sudden deterioration over the last several years due to the effects of dust storms in China. The transnational effects of acid rain

Water Quality

Industrial Park Water Pollution Controls Enhanced

The EPA will commission experts and environmental organizations in the latter half of this year to audit and appraise the effectiveness of water pollution controls in 49 industrial park sewerage systems. Local environmental protection bureaus will be asked to bolster supervision of treatment organizations of industrial parks with poor performance ratings and ensure prompt improvements.

Since 2004, the EPA has been stepping up inspection and control of the nation's industrial park wastewater sewerage systems. Statistics show environmental protection agencies made 2,219 inspections of industrial park unified wastewater treatment plants and individual factories within park grounds in 2004. Penalties were issued in 142 instances, 46% of which were due to violations of the Effluent Standards, and 42% of which were due to circuitous or secret discharges. These results show that industrial park management organizations are not properly managing independent wastewater treatment plants and factories within the parks. The occurrence of unusual effluent or secret discharge indicates an urgent need to strengthen overall management of industrial park sewer systems.

Based on a review of inspections and violations in 2004, the EPA drafted the "Industrial Park

as a result of industrialization and economic growth in Asia are also becoming more apparent. These phenomena highlight the importance of paying close attention to the long-term influence of air pollutants transported from greater Asia to Taiwan. The establishment of an international ambient air quality monitoring station will thus serve as an important platform for related international research.

Wastewater Sewerage System Inspection and Evaluation Plan" in 2005. Experts and scholars were invited to carry out inspections and evaluations of 49 industrial parks from July to October 2005, forming six inspection teams based on location (northern, central and southern Taiwan) and wastewater characteristics.

Industrial parks are diagnosed via evaluation items, which so far include the current status and flow of unified wastewater treatment plants (35%), managerial system of industrial park management organization (25%), expanded treatment capacity and status of improved treatment (25%), and others (15%). Based on each park's deficiencies, environmental protection agencies will establish a grading inspection control system for industrial park wastewater treatment facilities. As a measure of encouragement, parks are awarded for outstanding achievements and

performance scores are announced publicly for all to see.

The EPA emphasizes that from 2005 industrial park wastewater treatment will be divided into three stages of water pollution controls. The first stage coordinates with the recently promulgated *Criteria for Determining Penalties for Violations of the Water Pollution Control Act* Causing Serious Pollution and ended in April 2005 with 1,168 inspections carried out resulting in 41 violations. The second stage involves inspection and evaluation of industrial park management organizations and their management of sewerage systems. Penalties are issued whenever violations occur.

Waste Management

Cross-Ministerial Efforts Promote Reuse of Industrial Waste

Great strides are being made to fulfill "zero waste" objectives for the gradual transformation of industrial waste, which comprises the majority of all waste, into a sustainable resource. To encourage industry, the EPA and other related ministries have designated 92 types of industrial waste that can be directly reused by recycling organizations without applying for a special permit.

Encouraging industry to employ reuse methods to solve industrial waste problems, the Ministry of the Interior, Ministry of Finance, Ministry of Economic Affairs, Ministry of Education, Ministry of Transportation and Communications, Council of Agriculture, Department of Health and National Science Council have successively drafted and promulgated regulations concerning the reuse of industrial waste by industries based on Article 39 of the *Waste Disposal Act* (廢棄物清理法). These ministries have announced a combined total of 92 types of reusable industrial waste and management methods.

The third stage of controls are based on the evaluation results of each industrial park. Inspections and control work are administered to differing degrees and frequencies depending on prior evaluations. For industrial parks with lower performance scores, environmental protection agencies are ordered to enforce closer supervision and ensure improvements are made. Outcomes are coordinated through the Ministry of Economic Affairs' Industrial Development Bureau and the National Science Council. Together these agencies jointly supervise the industrial parks in properly managing wastewater treatment and effluent discharge so as to enhance the outcomes of water pollution control measures.

All types of industrial waste designated in these ministries' regulations can be directly reused by industries or recycling enterprises in the manner specified without applying for a special permit.

Based on the trend of online reporting by industry organizations in recent years, the EPA points out that over 70% of reported waste is reused, showing that sustainable use concepts are already being put into practice in the industry world. Through strong promotion by the public sector to hasten the maturation of recycling technology, as well as close exchanges with other countries,

more and more industries choose recycling as the primary method of waste management. There is now widespread concern among industry organizations about how to promptly obtain information on recycling enterprises and appropriate recycling channels for their waste.

Addressing this concern, the EPA has coordinated with other central government ministries to make data on accredited and locally registered recycling organizations available online at http://waste1.epa.gov.tw/audit2/AllUser/User_Select2.asp?. Enterprises can obtain the information they need immediately and free of charge through this website.

The EPA indicates that in the past unscrupulous enterprises have passed themselves off as certified recyclers only to dump or otherwise illegally dispose of industrial waste. After obtaining information on recycling enterprises, industry organizations should get to know whether these enterprises indeed conform to

Activity

Workshop on Household Wastewater Reuse

To promote the treatment and reuse of household wastewater, on May 20, the EPA held a tour and workshop on the survey, evaluation and management of household wastewater treatment and reuse. Organizations with achievements in household wastewater treatment and reuse were invited to present methods of wastewater treatment management, wastewater treatment reuse measures, and education initiatives toward wastewater reuse. Through exchange of experience, strengthen consensus on wastewater treatment and sustainable use of water resources. Through outstanding examples to practice and analyze, arouse citizen, industry, government, and academia to jointly promote the treatment and reuse of household wastewater.

waste reuse regulations. If there is still need of clarification, enterprises can request assistance from the local EPB in charge of the recycling organization in question.

Toxic Substance Management

Fish Toxicity Test Standards Established to Monitor Drinking Water

A recent incident has raised citizen concern about the quality of the nation's drinking water. The EPA has recently established new standards for testing source water quality for toxicity of pollution on fish. These test standards will serve as an early warning mechanism for water source management and tap water enterprises throughout greater Taiwan and its outlying islands.

A recent incident involving the discovery of rat poison in the Jinsha Reservoir of Kinmen County in

June has raised citizen concern about the safety of drinking water. The EPA has followed the Executive Yuan's instructions to direct water source management agencies in establishing standards for routine toxicity testing and response mechanisms. The Executive Yuan then convened the nation's experts and scholars and related agencies in a series of discussions to review and revise the initial draft standards. The standards were approved in March 2005 and sent to related management agencies for reference and implementation.

In developing the testing standards, the EPA first established a basic framework based on existing methods for source water quality safety mechanisms, including the Taiwan Water Corporation's prior completion of "*Work Guidelines for Source Water Toxic Pollution Monitoring via Lab Experiments in Fish Cultivation*," and the Taipei Water Department's "Essentials for Lab Observation of Fish from Source Waters." The EPA's Environmental Analysis Laboratory then completed the framework

based on the "Study on Standard Methods for Fish Toxicity Testing" by Dr. Chen Hon-cheng (陳弘成) of National Taiwan University's Zoology Department as well as related material from other nations.

The standards on fish toxicity testing for source water quality provide guidelines on most suitable fish for testing (indicator species include shubunkin and carp), fish age, fish size, mortality of fish raised in purified water, testing equipment (including tank size, materials, automatic equipment), testing steps (including frequency of changing water, number of fish to test, feeding, frequency of changing lab fish), recording observations (including abnormal behavior of lab fish, source water quality, feeding conditions, signs of diseased fish), and response measures.

The advantages of the new standard are that it: 1) shortens the time required to implement emergency response measures, 2) facilitates observation of types and traits of fish illnesses (poisoning), 3) facilitates observation of abnormal fish behavior, 4) allows immediate control over testing tanks intake source water quality, 5) saves human, material and financial resources, and 6) eases maintenance and management.

News Brief

Chang Kow-lung Appointed EPA Minister

A candidate has been appointed to serve as EPA Minister, which had been vacant for over a month. The first wave of cabinet reorganization was decided by high-ranking officials on 3 June 2005, with the seat of EPA minister given to former deputy minister of the Ministry of Examination,



Chang Kow-lung, EPA Minister

Chang Kow-lung (張國龍). Chang began his term of office on 8 June 2005. Sixty-seven year old Chang Kow-lung received a doctorate in physics from Yale University and once served as deputy minister of the Ministry of Examination. Speaking on environmental policies he wishes to promote while in office, Chang indicated that he first wants to gain a full understanding of the office, however indicated that he already has a good command of the general direction of environmental policy. Chang expressed that both continuation and reform of existing policies are equally important, and already sound environmental policies will naturally be continued.

General Policy

Environment Day: Over 1,300 Volunteers Pledge to Patrol Rivers

On World Environment Day, June 5, the EPA held a river patrol volunteer pledge activity on the shore of the Tanshui

River in Bali, Taipei County. Executive Yuan Premier Frank Hsieh called on the citizenry to join efforts to protect water resources and develop symbiosis between humans and the environment.

One of the largest river patrol volunteer pledge activities to take place in northern Taiwan was held on Environment Day, 5 June 2005, in Bali (八里), Taipei County. The "Local Love for Rivers and Oceans Volunteer Patrol Pledge" activity was jointly held by the EPA and the Taipei County Government. Premier Frank Hsieh (謝長廷) and Acting Minister Tsay Ting-quay (蔡丁貴) led over 1,300 representatives of river patrols in Taiwan's 25 counties and cities to challenge polluters.

The Premier stressed during his opening remarks that his reference to the concept of coexistence means not only harmony between

political parties but more importantly refers to symbiosis between humans and nature. Hsieh expressed hope that more citizens get involved in activities to protect water resources. Hsieh pointed out that Taiwan's rivers have suffered heavy pollution in the past and recalled when river water in Kaohsiung City was so black that it could be used to write calligraphy. Owing to the government's persistent efforts in remediation, river water quality has steadily improved in recent years.

The EPA proposed adding Environment Day as a national holiday in the first draft of the *Basic Environment Act* in 1998. When the Act took effect in 2002 it was decided that this national holiday would coincide with the UN's World Environment Day on June 5. Environment Day is a day for the nation's citizens, companies and all levels of government to

embody environmental protection concepts and show mutual concern for all environmental issues. On this year's Environment Day, the EPA and the Taipei County Government specially invited the nation's river patrol volunteers to Bali, Taipei County, to participate in the "Local Love for Rivers and Oceans Volunteer Patrol Pledge" as a way of showing the mutual resolve of government and citizens to defend the rivers and oceans.

The Executive Yuan ratified the EPA's "River and Ocean Water Quality Protection and Improvement Plan" in 2004. This plan allocates NT\$6 billion from 2005 to 2007 toward river remediation, and integrates communities and schools to establish volunteer river patrols. The patrols assist in investigating illegal pollution discharge and encourage the public to adopt local water quality purification facilities.

Activity

EPA's Sustainability Plans Affirmed

The Community Environmental Reform Plan promoted by the EPA Department of Planning has received the first place Sustainable Development Action Plan Implementation Award in the second annual National Sustainable Development Awards presented by the National Council for Sustainable Development, Executive Yuan (NCSA). This award-winning plan, which implements a pilot "community alliance" strategy, promotes community based environmental initiatives and has already provided assistance to over 800 communities with excellent results. EPA Acting Minister Tsay Ting-kuei expressed that the community environmental reform plan is a product of cooperation between the EPA and NGOs to promote overall reconstruction of communities. The EPA is the only government agency that has so

much interaction and involvement at the community level, most intimately and most substantial example of interaction with community members. Among the three winners of this year's Sustainable Development Action Plan

Implementation Award includes the Bureau of Environmental Inspection's food waste recycling and reuse plan. Many other sustainable development plans have also received high approval.



One community environmental reform project involves restoration of the native yellow water lily (Nuphar shimadai)

Activities

EPA Awards Outstanding Recycling Organizations in 2004

Acting EPA Minister Tsay Ting-kuei (蔡丁貴) presented awards to 11 county and city environmental protection bureaus (EPBs), 47 township halls, and 53 schools, and 20 welfare service organizations for the handicapped on 30 May 2005, commending these entities for their outstanding performance last year in resource recycling and dry cell battery recycling in particular. "Dry Cell Battery Recycling Enterprise Participation Awards" were also conferred on seven corporations to thank their assistance in promoting awareness of battery recycling. Performance audits were carried out on each county/city's management of recycling affairs in 2004. Audits were divided into three groups based on population and different local characteristics. The EPBs of Taipei City, Kaohsiung County and Yilan County received first place. Based on audit placement, the highest scoring organizations can receive group awards of NT\$200,000~NT\$1,000,000, and will be considered when issuing budgetary assistance next year.

President Chen Volunteers to Promote Recycling

This year's May 20 "Volunteer Day" was different, especially for President Chen Shui-bian. Resounding the significance of this national holiday, President Chen paid a visit to the Tzuchi Resource Recycling Station in Neihu, Taipei City and personally lent

a hand in sorting recyclables. Donning a volunteer's vest, Chen took the opportunity to experience the joy of a day of volunteer work. Chen commented that volunteer work is not just a contribution of one's own effort, but is more importantly the sense of accomplishment one earns in the process of participation. Chen expressed hopes that all citizens volunteer in one way or another as a way of experiencing joy and growth through helping others and inspiring more volunteerism in Taiwan.

Sustainable Taiwan Forum on Dioxin Risks

The Department of Health (DOH) and the EPA jointly held the "Sustainable Taiwan Forum on Recognizing Dioxin Risks" on 3 June 2005. The

theme of discussion laid special emphasis on dialogue with citizens and deliberation proceeded along the two main lines of human health and environmental risk. It is hoped that citizens can gain a clearer awareness of dioxin in the environment and its effect on human health. There was also talk of how to get citizens to practice "well-rounded, diverse, and low-fat" dietary habits, as well as actively adopt environmental actions such as sorting trash and recycling plastic products. Both approaches are ways to reduce the generation of dioxin through everyday habits. A brochure to increase citizen awareness of dioxin was issued during the forum, and contents of discussion have been made available for citizens to download from the websites of both the DOH and EPA.



President Chen volunteers to sort cans, gaining firsthand experience in the recycling process.

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