



Environmental Policy Monthly

Environmental Protection Administration, R.O.C. (Taiwan)

Feature Column

Soil Act Revised to Enforce Polluter Accountability

The Soil and Groundwater Pollution Remediation Act was delayed for many years until finally promulgated in 2000. In consideration of legislative timing factors and problems defining the responsibilities of polluters, the Act is undergoing its second revision since the last revision in 2003, with the purpose of enforcing polluter accountability.

Incidents involving factory pollution of farmland soil have successively occurred in Taiwan since the 1980s. In 1991, the EPA drew up the Soil Pollution Control Act (draft), which sat for five years before it was finally acted upon. While under formulation, the draft act was limited by timing factors and the design of a response system did not fully consider land changes, financial measures and tracing of accountability. The Legislative Yuan returned proposed revisions in 1996, and the bill was renamed the Soil Pollution Remediation Act (draft) and sent to the Legislative Yuan for review in June 1999. Later, experts, scholars and legislators recommended that groundwater cases be included under the Act. After revisions, the new bill was sent to the Legislative Yuan.

The Soil and Groundwater Pollution Remediation Act (SGPRA) was promulgated by the president on 2 February 2000, clearly showing the government's determination to manage soil and groundwater pollution problems and lay down regulations for remediation work.

Containing 51 articles under 8 chapters, the main principles of the SGPRA are to:

1. Establish legislation for pollution remediation to prevent overlapping or conflict with other laws
2. Adopt information transparency principles and establish channels for public participation
3. Adopt a dual threshold system to effectively promote related remediation affairs
4. Establish a soil and groundwater pollution remediation fund to strengthen funding sources for

Related Laws in Other Countries Referred to in Drafting Revisions

In This Issue

Feature Column: Soil Act Revised to Enforce Polluter Accountability.....	1
Taiwan Collaborates with EU to Monitor Greenhouse Gases.....	3
Stricter Controls on Composite Noise.....	4
Suao-Hualien Expressway EIA Difference Analysis Approved.....	4
Environmental Specialist Installation and Management Regulations Revised	5
Hazardous Industrial Waste Regulations Revised.....	6
Sixth Gas Station Announced as Pollution Remediation Site.....	7
EPA Holds International Forum on Environment and Transportation Management.....	7
Manure to Bioenergy – Taiwan Draws on EU Experience	8
Livestock Industry Inspection Continues in Yunlin.....	9
EPA Assists Penghu in Handling Fish Die-Off.....	9
Taiwan's Environmental Performance Ranks 40 out of 149	10
Activities.....	11

pollution remediation

5. Expand pollution liability to include actual polluters and persons otherwise responsible for soil pollution incidents
6. Appropriately harmonize pollution remediation and soil use

After promulgation of the SGPR, some articles were revised on 8 January 2003. Since then, some problems have surfaced, hindering implementation and legal applications, including:

(1) Definition of polluters: The current definition of polluters states that an infringement of related laws must occur before investigation of liability can be conducted. This is not the case in other countries, where the priority is placed on confirming actual pollution. Moreover, activities that cause soil and groundwater pollution are mostly due to long-term discharges, leaks, pumping or dumping of pollutants. Therefore, the Act's current definition of polluters does not fit the current situation or comply with international trends.

(2) Responsibilities of polluters are too lenient. Existing articles require polluters to take up management responsibilities. However, compensation liability or penalties are given only when land is announced as a remediation site due to a major error. There is a considerable gap between requiring management responsibilities and making one accountable for pollution.

(3) For remediation site land that has already entered

legally enforced auctioning procedures, the SGPR previously did not specify that the auction process should be suspended. Without such a clause, the auction process may be allowed to continue, and a polluted site may be placed on the market for sale. A third party could thus potentially purchase polluted land and incur damages.

Revisions to the SGPR have been formulated to retain the original meaning of the Act after analyzing the problems and needs that have arisen since its implementation and after referring to the development of related laws in other countries. The revised articles are still organized into eight chapters but the number of articles has increased from 51 to 57. The Executive Yuan sent the revised draft to the Legislative Yuan for review on 4 February 2008.

Polluters Subject to Controls and Remediation Regulations

The latest revisions to the SGPR are as follows:

1. The definition of "polluter" has been revised to include "those potentially responsible for pollution." Polluters should also bear responsibility for site investigation and remediation work for pollution caused by accumulated discharges over time.
2. The liability and obligations of related persons to monitor the land have been increased. Polluters and those potentially responsible for pollution should both bear responsibility for cleanup and compensation.
3. The responsibilities of industry competent authorities to regularly monitor soil and groundwater pollution in areas suspected to have



 Soil pollution remediation site

- serious pollution have increased.
4. The specialist certification system has been strengthened to ensure the quality and outcomes of plans or information submitted according to law.
 5. Rules have been formulated requiring competent authorities to convene negotiation meetings and adopt emergency measures when necessary for sites with soil or groundwater pollution due to natural environmental background factors.
 6. Restrictions and penalties for pollution control sites have increased and regulations have been added to suspend land auctioning processes.
 7. To guarantee that expenditures by competent authorities are promptly compensated, regulations have been added to prevent liable entities from transferring or establishing rights for registered assets.
 8. Existing health risk assessment mechanisms have been made more comprehensive, and it has been added that pollution site remediation objectives can be set based on health risk assessment results to decrease pollution remediation costs and expedite remediation work.
 9. Soil and groundwater pollution remediation fee funds have been expanded to include within the scope of fee collection not only chemical substances but also other substances and products likely to cause pollution.
 10. To increase economic incentives for land development, regulations have been cancelled so that payment of remediation fund compensation is no longer required before implementing development plans on polluted land.
 11. Penalties have been increased for polluters of land announced as pollution sites to reduce the incidence of soil and groundwater pollution.
 12. Regulations have been added requiring submission of pollution control plans and related obligations so as to enforce the SGPR before pollution occurs, and appropriately manage control sites.
- The revision of the SGPR guarantees that polluters will take full responsibility and owners will pay more careful attention when managing their land to avoid polluting the soil and groundwater. The revisions also strengthen the competent authority's management of control and remediation sites. These measures will help reduce soil and groundwater pollution incidents and enhance pollution amelioration work.

Climate Change

Taiwan Collaborates with EU to Monitor Greenhouse Gases

Taiwan is engaged in international cooperation to reduce greenhouse gases. With the EPA's endorsement, National Central University signed a memorandum of cooperation with the EU in Belgium on 18 February 2008 regarding plans to monitor greenhouse gases over the Pacific Ocean. Taiwan's participation fills a crucial gap in this global monitoring plan by gathering data from the western Pacific Ocean, which was otherwise restricted due to aircraft traffic.

The signing ceremony for a memorandum of cooperation between the National Central University and the EU to monitor greenhouse gases over the Pacific Ocean was held at the International Press Center in Brussels, Belgium. Germany's FZJ national laboratory and France's CNRS national laboratory represented the In-Service Aircraft for Global Observing System (IAGOS) in signing the memorandum, and National Central University represented Taiwan. EPA Minister Winston Dang was present to witness the signing in person.

China Airlines and Evergreen Marine Corp will assist the plan to monitor greenhouse gases over the Pacific Ocean by using planes and boats on existing

international routes to collect monitoring information of small particles in the atmosphere over the Pacific Ocean. The long range transmission of air pollutants will undergo analysis to serve as a foundation for formulating air pollution prevention policy.

EPA Minister Dang addressed officials, experts, scholars, civil organizations and international media of EU states engaging in environmental protection affairs, emphasizing that Taiwan's lack of membership in the UN makes it all the more difficult for Taiwan to take action in the international arena. Despite this hurdle, Taiwan and the EPA are still willing to participate in international cooperation plans involving greenhouse gas reduction related issues,

and actively seek opportunities to participate in international cooperation. Minister Dang believes that Taiwan's effort to seek sustainable development of the environment will eventually be recognized and affirmed by the international community.

Before the meeting, Minister Dang spoke on

sustainable development policy in Asia and innovative methods under implementation, using Taiwan as a model. He spoke to the international community about Taiwan's hard work and achievements in the area of waste recycling and greenhouse gas reductions. Taiwan has pushed its recycling rate up to 36%, far surpassing that of the US and Japan.

Noise Control

Stricter Controls on Composite Noise

Noise pollution is often not just from one source alone, so how does one go about filing a complaint or issuing penalties? The Noise Control Act has been amended to provide special control regulations that address excessive "composite noise" emanating from different sources.

The EPA announced revisions to Articles 2, 4 and 6~1 of the Noise Control Act (噪音管制標準), which will begin regulating low frequency noises from construction sites from 1 January 2009. Revisions also address the problem of disruptive noises from composite sources including cooling towers, air conditioning systems and other equipment. New regulations have been drafted to address noise exceeding control standards and emanating from different sources, requiring improvements to such equipment and specification of different noise control standards for each type of equipment. This measure is expected to effectively solve the problems of disruptive composite noises.

The EPA indicates that in recent years people have filed frequent complaints about composite noises from cooling towers and air conditioning systems that seriously disrupt the peace. However, upon investigating noise sources, environmental agencies have found that the combined effect of noises from different sources often exceed noise standards while separate noises independently generated by different people or owners actually comply with the noise control standards. In the past, it has been impossible to legally require owners make improvements in such situations.

The EPA began measuring composite noises in living environments from 2006. The current revision sets

stricter control standards based on those results. For example if the source of composite noises is from two owners or users, the noise control standard for each owner should be reduced by at least three decibels. If three owners or users are involved, noise control standards should be reduced by four decibels, and so on. This ensures a degree of fairness when dealing with composite noises.

The EPA points out that in current apartment buildings, each floor often has many different owners. In many apartments, cooling towers or air conditioning systems are placed in one centralized location due to the use of space or convenience of installation. This often results in centralization of composite noise that can seriously disturb neighbors. Current laws have no way of enforcing improvements to such situations; thus people who are unable to tolerate such noise eventually move out. Regulations have been revised to authorize the government to require improvements, which if are not carried out before the given deadline, violators could face penalties ranging from NT\$3,000 to NT\$30,000.

The EPA calls on apartment owners or building management committees to reevaluate the locations of cooling towers and air conditioning systems. If composite noises already seriously affect the peace of nearby living environments, they should promptly relocate equipment in decentralized locations to avoid penalties.

EIA

Suao-Hualien Expressway EIA Difference Analysis Approved

On 3 March 2008, the EPA convened the fourth meeting of a special working group to discuss the "National Highway East Coast Suao-Hualien Segment (Su-Hua Expressway) EIA Difference Analysis, Environmental Status Difference Analysis and Countermeasure Review Report." Over 20 organizations and several Hualien County representatives attended the meeting. A conclusion was reached after six hours of discussion.

The original environmental impact statement (EIS) for the Su-Hua Expressway was reviewed and conditionally approved in 2000. The plan was also approved by the Ministry of Transportation and Communications (MOTC) on 27 December 2002. Based on Article 17 of the Environmental Impact Assessment Act (環境影響評估法), developers must implement plans in precise accordance with the content of EIS and review conclusions. Later the Taiwan Area National Expressway Engineering Bureau (TANEEB), MOTC, applied for changes to some details of the plan, and was thus required to submit an Environmental Impact Difference Analysis Report. As the plan was not commenced within three years of receiving MOTC approval, they were further required to submit an Environmental Status Difference Analysis and Policy Review Report. These two documents were submitted to the EPA on 8 January 2007.

Some participants of the meeting questioned the meeting time and place. The EPA replied that the EPA and the Environmental Impact Assessment Commission (EIAC) has acted in compliance with the Environmental Impact Assessment Act and professional requirements by conducting an expert review of the changed content and environmental differences over the past three years. The meeting with the EIAC was scheduled at this time because TANEEB submitted the revised content to the EPA on 22 February 2008; the EPA is bound to legal procedures specifying when a working group review meeting must be convened. This was the single consideration for scheduling the meeting at this time.

After six hours of discussion, a consensus was reached that there should be a safe road between Taipei and the East Coast. However, because many EIAC members felt TANEEB must submit a complete report of revisions made, the following conclusions were reached:

Developers should include the following supplementary information and revisions in their Environmental Impact Difference Analysis and the Environmental Status Difference Analysis and Policy Review Report. After the working group members convene a confirmatory meeting with experts and scholars to review and approve revisions, the results shall be provided to the EIAC for discussion.

1. If this plan is approved by the industry competent authority, construction should be prioritized in the mountainous segment linking Suao and Chongde. Before beginning construction of the segment on the flat plains south of Chongde, they must submit a report on the long-term impacts to the social environment of the East Coast.
2. A survey on cultural remnants should be conducted before construction begins.
3. Water reduction subsidies should be given and groundwater tables should be continually monitored at road segments that cut through permeable geological strata.
4. Tunnels should be built to maintain original hydrological systems.
5. Environmentally preferable countermeasures should be developed for the transport of excavated earth.

General Policy

Environmental Specialist Installation and Management Regulations Revised

The EPA finalized revisions to the Environmental Specialist Agency/Personnel Installation and Management Regulations. This regulation has been revised eight times since first promulgated on 21 June 1995. The latest revision has modified Article 12 and has added a new article. Complementing newly promulgated revisions to the Toxic Chemical Substances Control Act promulgated on 3 January 2007, apart from existing requirements to install a toxic management specialist for the manufacture, use and storage of toxic chemical substances, the revision has added that the transportation of toxic substances will also require specialized personnel to ensure

competency in pollution prevention, hazard prevention and emergency response work.

The EPA has revised regulations requiring enterprises to enhance toxic chemical substance transport safety management by actively adopting accident prevention measures. It has been added that one Class III specialized personnel shall be installed for non-pipeline transport of single substances comprising over 50 kg of gaseous substances, over 100 kg of liquid substances, or over 200 kg of solid substances. The name of this technician as well as the transport personnel shall be filed on transport manifests.

This revision of qualification criteria for obtaining Class III specialized personnel is considerably more lenient than the current regulations requiring Class I and Class II specialized personnel. Those with Class I or Class II specialist qualifications for the manufacture, use, and storage of toxic chemical substances automatically qualify as Class III specialized personnel. Also, transporters of toxic chemical substances should be someone already serving in that profession, and should have credentials showing over three years of practical work experience in transporting chemical products. This includes personnel who pass training or obtain a permit from a training agency under the Ministry of Transportation and Communications showing they have passed professional training to transport dangerous products. As long as they have passed the training requirements they can serve as Class III specialized personnel.

In this revision the EPA has also specified standards on the work content to be conducted by toxic

chemical substance specialized personnel. Added to the scope of businesses that must install toxic chemical substance specialized personnel includes those assisting in pollution control, hazard prevention and emergency response work in relation to the Toxic Chemical Substance Control Act regulations. Toxic chemical substance Class III transport specialized personnel have been made interchangeable with Class I and Class II manufacture, use, and storage specialized personnel to comply with actual demands and prevent this position from being filled by an unqualified personnel. However, if a Class III substitute fills the position for a Class I or II specialized personnel, he/she should be qualified for Class I and Class II specialized personnel work.

Looking after the rights and interests of specialized personnel, new regulations forbid specialized personnel agencies to refuse specialized personnel from participating in training or advanced training. It has also been specifically added that specialized personnel who have not yet applied for advanced training or have failed to participate in trainings on two consecutive occasions will have their qualification certificate revoked by the EPA.

The EPA stresses that to reduce the impact of revisions on enterprises, those already handling the transport of toxic chemical substances shall install Class III specialized personnel according to the newly added regulations, and give the toxic chemical substance transporter around one and a half years grace period to prepare. A qualified transporter must be installed before 1 July 2009.

Waste Management

Hazardous Industrial Waste Regulations Revised

To comply with the prior revisions to the Standards for Defining Hazardous Waste and the Methods and Facilities Standards for the Storage, Clearance and Disposal of Industrial Waste, the EPA has revised regulations by readjusting certain items of listed hazardous industrial waste. On 20 February 2008, the EPA promulgated revisions to Articles 3 and 4 of the Hazardous Industrial Waste Monitoring and Recording Management Regulations.

This revision came about primarily to complement prior revisions of related regulations on 14 December 2006. The focus of revisions includes additional regulations for sterilization of sharps in biomedical waste. The revisions complement modifications made to names and definitions of sterilization methods. Solid or liquid waste is targeted

for toxic chemical substance testing. Dissolved toxic industrial waste testing analysis categories are selected based on relatedness of raw materials, manufacture and waste composition characteristics. The scope of items and concentrations for designated testing analysis categories is in Appendix Chart 4. Also added is testing categories for dioxin hazardous

industrial waste.

Moreover, former control regulations have been revised for the final disposal of post-treatment hazardous industrial waste with testing categories and concentrations specified for pesticide pollutants, organic pollutants or toxic heavy metals as detailed in Appendix Chart 4. For those adopting heat treatment methods for industrial waste, examination categories should implement total equivalent quantities (TEQ) containing any of 17 compounds from the same source including 2,3,7,8-tetrachlorinated dibenzo-p-dioxin (TeCDD) and furans. To make the function of management more comprehensive, it has been added

that if results from tests voluntarily conducted by an enterprised or enforced by competent authorities or implementing agencies exceed the standards for defining hazardous industrial waste, the enterprise shall be subject to original requirements for testing frequency.

The EPA indicates that this regulation was revised in 2007 according to legal procedures requiring the holding of public briefings and discussions. The draft was further revised after referring to the views of all circles. Please refer to the EPA website for more details on the revised articles (<http://w3.epa.gov.tw/epalaw/index.aspx>).

Soil and Groundwater

Sixth Gas Station Announced as Pollution Remediation Site

On 14 February 2008, the EPA announced the Jiaren Gas Station on Chungshan Road of Rende Township, Tainan County, as a soil and groundwater pollution remediation site. This is the sixth gas station to be listed as a remediation site. The EPA states that this land will be subject to restrictions according to regulation. Rights may not be transferred and the site will not be removed from the list until the polluter completes related remediation work.

A gaseous explosion occurred at the Jiaren Gas Station (owned by Jiaren Gas Station Co. Ltd.) in March 2002 when Taipower Company installed underground cables near the site. The Tainan County Environmental Protection Bureau installed a groundwater monitoring well and began collecting soil samples for analysis. Total petroleum hydrocarbons (TPH) in the soil were found to exceed control standards and the Tainan County government announced the area as a soil pollution control site on 9 April 2002. The area was demarcated as a soil and groundwater control zone, and drinking or using the groundwater was prohibited to protect the health of residents.

Jiaren Gas Station had been implementing improvements according to its pollution improvement and control plans approved by the Tainan County government in April 2003. After the deadline for improvements was up on 28 February 2006,

inspections revealed groundwater benzene concentrations to exceed Class II groundwater pollution control standards. Benzene was found as high as 28.6 mg/l, which is 572 times the control standard. In 2007, Jiaren Gas Station submitted a health risk assessment of this site according to the soil and groundwater pollution remediation site preliminary assessment regulations, but this has not yet passed government approval. Preliminary assessment results showed that the degree of pollution already meets criteria for a remediation site. After notification, the EPA announced it as a soil and groundwater pollution remediation site.

The EPA indicates that follow-up requirements for this site include the submission of more detailed soil and groundwater adjustment assessment plans. After survey assessment results are approved, the enterprise can submit groundwater remediation plans and begin carrying out remediation.

Climate Change

EPA Holds International Forum on Environment and Transportation Management

The EPA recently held an international forum on "The Environment and Transportation Management" in Taipei, inviting foreign experts and scholars to engage in international dialogue on three issues: 1) methods for managing and replacing vehicles in stages, 2) assessment of regional driving controls and fee collection, and 3) increasing public transportation to reduce environmental impact.

The number of motor vehicles in Taiwan continues to rise, resulting not only in congested traffic and wasted social resources but also seriously affecting air quality and public health. These are unfavorable consequences in terms of sustainable development of the environment. From 21–22 February 2008, the EPA held an international forum on "The Environment and Transportation Management," inviting foreign experts and scholars to discuss the three issues of managing or replacing vehicles in stages, assessing regional control of driving vehicles and collecting fees, and increasing public transportation to reduce environmental impact. These three issues were looked at in terms of policy theory and implementation experience drawing on foreign experience through focus topic lectures. The conclusions will serve as a reference for Taiwan when formulating related policy to expedite the promotion of vehicle control work.

The forum was held by the EPA, with assistance from the Institute of Transportation, Ministry of Transportation and Communications. Professor Fujii Satoshi of Japan Tokyo Institute of Technology, Professor Hermann Knoflacher, Head of the Institute for Transport Planning and Traffic Engineering, Technical University of Vienna, Austria, and Dr. H. Christopher Frey of North Carolina State University were invited to share the experience of Japan, Europe, and the US regarding the management and replacement of vehicles in stages. Professor Lee De-hong (李德紘) of the National University of Singapore explained electronic road pricing and vehicle

management policy. Mr. Brian of the Association of British Drivers spoke on the reasons for criticism of road pricing in London. Clean Air Initiative (CAI) Asia Secretariat Mr. Cornie Huizenga explained the current status of vehicle emissions management in Asia. Mr. Clive Rock, Principal of Silex Consulting Inc., a Vancouver-based consultancy specializing in urban transportation and related issues, and Dr. Gyeng-Chul Kim, deputy director of the Seoul Development Institute were invited to introduce the results of transportation systems developed in Vancouver and Seoul.

Also invited to the meeting were Taipei City Transportation Department Director Luo Shiaw-shyan (羅孝賢) and Kaohsiung City Transportation Bureau Director Wang Kuo-tsai (王國材) to introduce the transportation policy development visions of these two cities and share their experience.

The EPA indicates that although the EPA is not the competent authority of transportation, in recent years it has actively promoted transportation management measures including free bus systems, mass transport and bus transfers, and public bike rental systems to encourage the public to ride on public transportation and curb the use of private vehicles. In the future the EPA will continue to refer to foreign experience and evaluate the feasibility of implementing transportation management measures that are conducive to sustainable development and improving environmental quality.

Climate Change

Manure to Bioenergy – Taiwan Draws on EU Experience

While cow manure and sawdust may appear worthless in many people's eyes, it can actually be turned into a valuable energy resource. After the EPA Minister Winston Dang's recent trip to Europe, the EPA has decided to draw on the EU's experience by subsidizing Pingtung County in its efforts to generate electricity from methane from pig effluent. This trend could mark the beginning of Taiwan's "Green Economic Miracle."

EPA Minister Winston Dang recently led a delegation to Europe to look into ways to reduce greenhouse gases and recycle resources. Their first stop was Beckerich, Luxemburg on 17 February 2008, where they learned about renewable energy

from recovery of local agricultural waste and uses of solar energy. The village of Beckerich has made great strides in environmental protection by generating 85% of its own energy from anaerobic methane biodigesters.

With only 2,000 people, the village of Beckerich makes use of the local area's many cow farms. Cow manure is mixed with a certain ratio of sawdust and then put into an anaerobic digester to generate methane, which is supplied to meet the heating requirements of all village residents throughout the winter. This also solves the problem of treating cow manure by turning it into an inexpensive source of biomass energy.

Drawing from examples in Europe, Minister Dang pointed to another one of Europe's livestock raising states, Denmark, which raises about 25 million pigs on a small area of land about 40,000 square kilometers. Pig effluent is recycled to generate electricity and compost, while solving livestock effluent pollution problems at the same time. With only 2.7 million pigs there is no reason that Taiwan can't do the same.

Minister Dang said the treatment of pig farm effluent in Taiwan has been a frequent source of citizen complaints and headaches for farmers, sometimes even causing pollution. After drawing on the successful experience of cities in the EU, Dang believes Pingtung County will soon have a similar successful model to share with the world (please see EPM Vol.11, No.2).

Minister Dang said that successful environmental policy results from looking at the big picture while starting with what we have at hand. People frequently get stuck in the myth that economic development and environmental protection are at odds with each other. Beckerich provides a good example that breaks this myth, and shows that learning from international examples to reduce greenhouse gases could be the key to our survival.

Environmental Inspection

Livestock Industry Inspection Continues in Yunlin

Working to prevent river water quality from becoming polluted by pig effluent, the EPA has teamed up with the Yunlin County Environmental Protection Bureau to conduct inspections on pig raising development in Yunlin County. Inspections lasted from January to December 2007, with twelve enterprises indicted for a total of NT\$1.11 million in penalties. Inspections are still underway.

The EPA promulgated revisions to six articles of the Standards for Determining Specific Items and Scope of Environmental Impact Assessments for Development Activities (開發行為應實施環境影響評估細目及範圍認定標準). The Standards have undergone seven revisions since first promulgated on 18 October 1995.

The EPA indicates that Yunlin County is characterized as an agricultural county with a large number of pig farms. Some pig farms attempt to break the rules by discharging improperly treated pig manure directly into surface water bodies. The EPA conducts monthly monitoring of river water quality on Yunlin's waterways to improve the water quality of Yunlin's rivers. The monitoring results serve as a reference for determining the frequency of future investigations. From January 2007 to December 2007, a total of 240 pig farms were investigated and 12 were found in violation

of the Water Pollution Control Act (水污染防治法). Another investigation revealed that 4.16% of livestock enterprises in Yunlin County have not yet obtained wastewater (effluent) discharge permit documents.

The EPA calls on all enterprises to follow regulations to establish wastewater treatment facilities as well as promptly apply with local environmental protection bureaus for discharge permit documents. All enterprises that have already obtained discharge permits should appropriately design and operate wastewater facilities and by no means attempt to violate regulations.

The EPA furthermore asks citizens to immediately report illegal situations through the EPA complaint hotline (0800-066666). This helps the EPA dispatch personnel in a timely manner to enforce regulations and prevent pollution from occurring.

Environmental Sanitation

EPA Assists Penghu in Handling Fish Die-off

Cold surges have had a serious impact on Penghu County's fishing industry in the last half century. Consecutive days of low temperatures recently caused mass die-offs, leaving beaches covered with dead fish.

The EPA immediately dispatched personnel to Penghu to assess the situation, and approved an emergency budget of NT\$1.06 million to assist Penghu County with beach cleanup work. Apart from putting all efforts into helping the local government handle the situation, the EPA provided subsidies to help with weekly ocean water quality monitoring until the dead fish were completely cleaned up.

Penghu County comprises one city and five townships with a total coastline of 320 kilometers. Massive fish die-offs due to excessively cold temperatures have covered the shores with an astounding number of fish carcasses. Penghu County made an emergency request for help to the EPA, which immediately sent personnel and approved NT\$1.06 million in funding for hiring manpower and renting heavy machinery for extensive cleanup operations. The assistance went toward prompt cleanup of dead fish and maintaining environmental sanitation.

The EPA indicates that the cold weather fish die-off has caused fish to drift ashore. Working to ensure this situation does not result in further pollution of the environment, the EPA has called on the Penghu County government and residents to mobilize efforts and follow through with clean up efforts on their own so that Penghu's unique white sand beaches are quickly returned to their original appearance. The EPA has sent personnel to perform weekly monitoring of ocean water quality. So far the ocean water quality around Penghu is normal and fish carcass cleanup work has been completed.

Sustainable Development

Taiwan's Environmental Performance Ranks 40 out of 149

Yale and Columbia universities announced the 2008 Environmental Performance Index (EPI) on 23 January 2008 at the World Economic Forum held in Switzerland. Out of 149 countries under evaluation, Taiwan scored 80.0 and ranked 40th place, nearly on equal par with the US (score 81.0, 39th place) and surpassing Australia (46th), South Korea (51st), and two nations with similarly high population densities, the Netherlands (55th) and China (105th).

On the 2008 Environmental Performance Index (EPI), Taiwan showed excellent performance in the policy areas of environmental health (32nd place) and biodiversity and habitat conservation (37th place). Results showed good performance in managing air pollution, water pollution and public health.

Taiwan's evaluation turned out slightly worse than the 2006 EPI (24th place out of 133 countries), the reasons for which are as follows according to the EPA's analysis:

1. Adjustments to index framework and weighting: Major adjustments were made to the index framework and weighting of various indicators in the 2008 EPI, with indicator categories increasing from 16 to 25. Many of the newly added indicators were Taiwan's weak areas.
2. Waste reduction and resource recycling were not evaluated: The EPA has put great effort toward waste management policies in recent years, including the promotion of Zero Waste, source reductions and recycling. Taiwan's recycling performance has exceeded that of the US and

Japan as widely reported in international media, and is even acclaimed as a model for the world to follow. These efforts were not reflected in the EPI.

3. Many of the indicator figures are from unclear sources or are inaccurate: For example, Taiwan has either never used or has already banned the use of persistent pesticides, but scored "0" on the pesticide management index. Figures for Taiwan's SO₂ emissions came from an EU research group and did not accord with the figures provided by Taiwan. The computer calculations used by the evaluating organization for Taiwan's ozone concentrations differed greatly from Taiwan's own monitoring data.
4. UNEP water quality indicators lack accuracy: The water quality indicator recently developed by UNEP ranks countries far differently than what would normally be accepted. Many countries' water quality monitoring stations are in the single digits and the accuracy of this system awaits confirmation.
5. Greenhouse gas and air pollution emission figures are too high: A number of factors including intensive

industrialization, high car density, the nuclear-free homeland policy, and the fact that renewable energy is not yet at the stage of research and development, has kept Taiwan's greenhouse gas and air pollution emissions quite high. The EPA has worked hard to improve SO₂ and PM₁₀ concentrations over the years. As for greenhouse gas emissions, the EPA is continuing to push for the legislation of the Greenhouse Gas Reduction Act (溫室氣體減量法) and just established the Greenhouse Gas Reduction Management Office on 10 January 2008 to coordinate the integration of cross-ministerial initiatives and promote reduction plans.

6. Management of productive natural resources awaits improvement: The use of habitat and natural resources for Taiwan's agriculture and fisheries has

a detrimental impact on the environment. A lack of forest indicator figures had an influence on Taiwan's ranking.

7. River water quality awaits improvement: River water quality has improved under active promotion of related EPA programs, with seriously polluted river sections decreasing from 15.8% to 5.7% from 2003 to 2007. The number of reservoirs suffering eutrophication dropped from ten to six from 2003 to 2005, attesting to preliminary success of water quality improvement measures. Further improvements await livestock effluent pollution control and best management practices, such as planting ditches and vegetation corridors near mountain orchards and farms to decrease total nitrogen levels and improve water quality.

Activities

16th National Model Environmental Community Award Recipients Announced

Luffas into lampshades and community wastewater into ecoponds! With a little creativity, any residential environment can become an environmentally friendly place. The EPA announced the 18 winners of the 16th EPA National Model Environmental Community Awards, including Dingjhuang Community in the East District of Chiayi City, Tianpu Community in Yujing Township of Tainan County, and Yingshieh Community in Datong Township of Yilan County. These communities made full use of community resources to increase their quality of life. The list of communities is posted on the EPA's website (www.epa.gov.tw – Community Environmental Protection – Community Environmental Action Network).

Send a Flying Lantern into the Ethernet

Those wanting to avoid the crowds during the Lantern



▶ A resident's DIY beautification project makes use of discarded materials



▶ Online Fun Flying Lantern Activity web page

Festival can stay at home and create their own traditional lamps online. Over the spring holiday from January 29 to February 22, the EPA held the Online Fun Flying Lantern Activity on the industrial waste control information net, giving people a new way to enjoy this traditional holiday.

Letting off flying lanterns online not only allows people to make a wish in the comforts of their home, but also reduces the detrimental impact that this holiday typically has on the environment.

Reduction, Recycling and Reuse Performance Awards

Encouraging industry to appropriately treat industrial waste and reduce, recycle and reuse resources, in 2008 the EPA held the "Industrial Waste and Renewable Resource Clearance and Treatment and Resource Reduction, Recycling and Reuse Excellent Performance Awards." The registration deadline is 31 March 2008. Selection rules are posted on the EPA's website (www.epa.gov.tw) under the industrial waste management section. Those industries chosen for the best performance will be publicly commended and granted awards. All companies are welcome to participate. As in previous years, the selection will be based on the two categories of "Waste Clearance and Treatment and Resource Reduction, Recycling and Reuse," and "Renewable Resource Recycling and Reuse."

Plant a Tree, Leave Your Roots in Taiwan

The EPA held the "Plant a Tree, Leave Your Roots in Taiwan" tree planting activity on Valentine's Day (14 February 2008) to fight global warming and mitigate the greenhouse effect. Attending the event were over 300 citizens and foreign friends passionate about



▶ *Burkina Faso Ambassador Jacques Sawadogo (left), and Mr. Michael D. Reilly, Director General of the British Trade and Cultural Office (center) jointly presiding over the tree planting activity*

Taiwan, as well as 23 ambassadors and national representatives, including Burkina Faso Ambassador Jacques Sawadogo, and Mr. Michael D. Reilly, Director General of the British Trade and Cultural Office. Also present were Jhu Yu-feng (朱玉鳳), Vice Minister of the Ministry of Foreign Affairs and Lin Zong-nan (林宗男), Vice Minister of the Council of Agriculture. The six species of trees planted on that day were beech, flamegold, Cassia fistula, camphor, Fraxinus griffithii and Pterocarpus indicus. The trees are estimated to absorb between 240~360 tonnes of carbon dioxide after about 20 years.

Environmental Symbol Design Contest Sparks Creativity

Leading the public to adopt new environmental lifestyles that embrace resource recycling and reuse concepts and green consumption, the EPA held an environmental symbol design contest to spark creativity and let the public vote on designs for the preliminary selection. Designs chosen for the preliminary selection will be given Green Mark fabric made out of recycled plastic bottles as the designated material for creating the actual symbol. The first stage of the activity will last to 23 March 2008, with the highest prize being NT\$120,000. Preliminary entries will be given the designated fabric on 26 March 2008. Voters have a chance to win a year's subscription to the bimonthly design magazine. Details of this activity are posted online at <http://recycle.epa.gov.tw>.

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